

期末試験 No.1

問1. 次の微分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

なお、解答欄の s は sin, c は cos, ℓ は log を表す。

$$(1) \frac{d}{dx} (\sqrt[3]{\cos x}) = -\frac{\boxed{A} x}{3\sqrt[3]{\boxed{B} x} \boxed{C}}$$

$$(2) (e^{2x} \sin 3x)' = e^{2x} (\boxed{A} \sin 3x + \boxed{B} \boxed{C} 3x)$$

$$(3) \frac{d}{dx} (e^{x^2} \log |x^3 + 2|) = \frac{\{(\boxed{A} x^4 + \boxed{B} x) \boxed{C} |x^3 + 2| + \boxed{D} x^2\} e^{x^2}}{(x^3 + 2)}$$

$$(4) \left(\frac{\tan^{-1} \frac{x}{2}}{\sin x^3} \right)' = \frac{\boxed{A} \sin x^3 - (\boxed{B} x^4 + 12x^2) \tan^{-1} \frac{x}{2} \boxed{C} x^3}{(x^2 + 4) \sin \boxed{D} x^3}$$

$$(5) \frac{d}{dx} \left(\frac{\sin^{-1} \frac{x}{3}}{\log |9 - x^2|} \right) = \frac{\sqrt{(\boxed{A}^2 - x^2) \boxed{B} |9 - x^2| + \boxed{C} x \sin^{-1} \frac{x}{3}}}{(9 - x^2)(\log |9 - x^2|) \boxed{D}}$$

問 2. 次の不定積分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

ただし、解答用紙の s は sin、 c は cos、 ℓ は log を表す。

$$(1) \int \cos x \sin^3 x \, dx = \frac{1}{\boxed{A}} \boxed{B} \boxed{C} x + C$$

$$(2) \int \frac{3x\{\log(x^2+1)\}^2}{(x^2+1)} \, dx = \frac{1}{\boxed{A}} \{\boxed{B}(x^2+1)\} \boxed{C} + C$$

$$(3) \int (3x+2) \sin 3x \, dx = -\frac{(3x+2)}{\boxed{A}} \boxed{B} 3x + \frac{1}{\boxed{C}} \boxed{D} 3x + C$$

$$(4) \int \frac{2x-1}{(x-1)(x+2)} \, dx = \frac{1}{\boxed{A}} \boxed{B} \left| (x-\boxed{C})(x+\boxed{D}) \boxed{E} \right| + C$$

期末試験 No.2

問 3. $f(x) = e^{2x}$ のマクローリン展開の 3 次項 $\frac{\boxed{B}}{\boxed{A}}x^3$ の係数を求めよ。

問 4. 次の定積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

$$(1) \int_0^{\frac{\pi^2}{36}} \frac{2 \cos \sqrt{x}}{3\sqrt{x}} dx = \frac{\boxed{A}}{\boxed{B}}$$

$$(2) \int_0^1 x e^{2x} dx = \frac{e^2 + \boxed{A}}{\boxed{B}}$$

$$(3) \int_1^{1+\sqrt{3}} \frac{6}{x^2 - 2x + 10} dx = \frac{\boxed{A}}{\boxed{B}}$$

問 5. 次の偏微分を計算し、空欄を 1, 2, 3, 4, x , x^2 , y , y^2 で埋めよ。

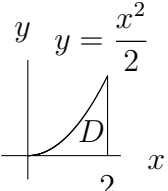
$$(1) z = \log |x^2 + xy^2 + y^3|, \quad \frac{\partial z}{\partial x} = \frac{2\boxed{A} + \boxed{B}}{x^2 + xy^2 + y^3}, \quad \frac{\partial z}{\partial y} = \frac{2x\boxed{C} + 3\boxed{D}}{x^2 + xy^2 + y^3}$$

$$(2) z = xy e^{x^2+3y}, \quad z_x = (\boxed{A} + \boxed{B} x^2 y) e^{x^2+3y}, \quad z_y = (\boxed{C} + \boxed{D} xy) e^{x^2+3y}$$

$$(3) z = \text{Tan}^{-1} \frac{y}{x}, \quad \frac{\partial z}{\partial x} = -\frac{\boxed{A}}{\boxed{B} + y^2}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{C}}{x^2 + \boxed{D}}$$

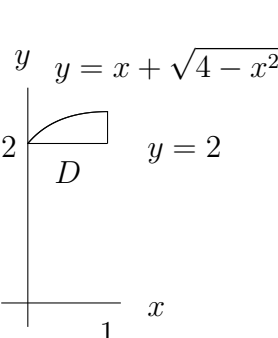
問6. 次の重積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

(1)



$$\iint_D xy^2 dS = \frac{\boxed{A}}{\boxed{B}}$$

(2)



$$\iint_D \frac{1}{(y-x)^2} dS = \log \boxed{A} - \frac{\boxed{B}}{\boxed{C}}$$

問7. 次の微分方程式を解き、空欄を 2, 3, 4, x , x^2 , x^3 , \tan , \log で埋めよ。
ただし、解答用紙の t は \tan を、 ℓ は \log を表す。

(1)

$y' = x(y^2 + 4), \quad \text{解 } y = \boxed{A} \boxed{B} (\boxed{C} + C)$

(2)

$y' = xy + xe^{-\frac{x^2}{2}}, \quad \text{解 } y = -\frac{1}{\boxed{A}} e^{-\frac{\boxed{B}}{\boxed{C}}} + C e^{\frac{\boxed{D}}{\boxed{E}}}$

期末試験

学籍番号

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氏名

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0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

問 1(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(5)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

問 2(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ
E	1	2	3	4	5	s	c	ℓ

問 3

A	1	2	3	4	5	6	7	8
B	1	2	3	4	5	6	7	8
A	1	2	3	4	5	6	π	e

問 4(1)

B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e

(2)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(3)

問 5(1)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(2)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(3)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

問 6(1)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(2)

B	1	2	3	4	5	6	π	e
C	1	2	3	4	5	6	π	e
A	2	3	4	x	x ²	x ³	t	ℓ

問 7(1)

B	2	3	4	x	x ²	x ³	t	ℓ
C	2	3	4	x	x ²	x ³	t	ℓ
A	2	3	4	x	x ²	x ³	t	ℓ

(2)

B	2	3	4	x	x ²	x ³	t	ℓ
C	2	3	4	x	x ²	x ³	t	ℓ
D	2	3	4	x	x ²	x ³	t	ℓ
E	2	3	4	x	x ²	x ³	t	ℓ

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問 1(1)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
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(2)

A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ

(3)

A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>

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B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ

(5)

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問 2(1)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

(2)

A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

(3)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

(4)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
C	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
D	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
E	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

問 3

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e

問 4(1)

B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
A	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e

(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e
B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	x^2	y	y^2

問 5(1)

B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	y	<input checked="" type="radio"/>
C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	<input checked="" type="radio"/>	y^2
D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	y	<input checked="" type="radio"/>

(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	<input checked="" type="radio"/>	y^2
B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	y	y^2
C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	x^2	y	y^2

(3)

D	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	x^2	y	y^2
A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	<input checked="" type="radio"/>	y^2
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	y	y^2

問 6(1)

C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	x^2	y	y^2
D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	y	<input checked="" type="radio"/>
A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e

(2)

B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e

問 7(1)

C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e
A	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	x^3	t	ℓ
B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	x^3	<input checked="" type="radio"/>	ℓ

(2)

C	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	x^3	t	ℓ
A	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	x^3	t	ℓ
B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	x^3	t	ℓ
C	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	x^3	t	ℓ
D	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	x^3	t	ℓ
E	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	x^2	x^3	t	ℓ

微積分半期演習期末試驗 1 解答

問 1

- (1) $A = \sin$, $B = \cos$, $C = 2$,
- (2) $A = 2$, $B = 3$, $C = \cos$,
- (3) $A = 2$, $B = 4$, $C = \log$, $D = 3$,
- (4) $A = 2$, $B = 3$, $C = \cos$, $D = 2$,
- (5) $A = 3$, $B = \log$, $C = 2$, $D = 2$

問 2

- (1) $A = 4$, $B = \sin$, $C = 4$,
- (2) $A = 2$, $B = \log$, $C = 3$,
- (3) $A = 3$, $B = \cos$, $C = 3$, $D = \sin$,
- (4) $A = 3$, $B = \log$, $C = 1$, $D = 2$, $E = 5$

問 3

$$A = 3. \quad B = 4$$

問 4

- (1) $A = 2$, $B = 3$,
- (2) $A = 1$, $B = 4$,
- (3) $A = \pi$, $B = 3$,

問 5

- (1) $A = x$, $B = y^2$, $C = y$, $D = y^2$,
- (2) $A = y$, $B = 2$, $C = x$, $D = 3$,
- (3) $A = y$, $B = x^2$, $C = x$, $D = y^2$,

問 6

- (1) $A = 4$, $B = 3$,
- (2) $A = 2$, $B = \pi$, $C = 6$

問 7

- (1) $A = 2$, $B = \tan$, $C = x^2$,
- (2) $A = 2$, $B = x^2$, $C = 2$, $D = x^2$, $E = 2$

期末試験 No.1

問1. 次の微分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

なお、解答欄の s は sin, c は cos, ℓ は log を表す。

$$(1) \frac{d}{dx} \left(\frac{1}{\sqrt{\sin x}} \right) = - \frac{\boxed{A} x}{2 \sqrt{\boxed{B} x} \boxed{C}}$$

$$(2) (e^{3x} \cos 2x)' = e^{3x} (\boxed{A} \cos 2x - \boxed{B} \boxed{C} 2x)$$

$$(3) \frac{d}{dx} (e^{x^3} \log |x^2 + 1|) = \frac{\left\{ (\boxed{A} x \boxed{B} + \boxed{C} x^2) \log |x^2 + 1| + \boxed{D} x \right\} e^{x^3}}{(x^2 + 1)}$$

$$(4) \left(\frac{\tan^{-1} \frac{x}{3}}{\cos x^2} \right)' = \frac{\boxed{A} \cos x^2 + (\boxed{B} x^3 + 18x) \tan^{-1} \frac{x}{3} \boxed{C} x^2}{(x^2 + 9) \cos \boxed{D} x^2}$$

$$(5) \frac{d}{dx} \left(\frac{\sin^{-1} \frac{x}{2}}{\log |4 - x^2|} \right) = \frac{\sqrt{\boxed{A} - x^2} \boxed{B} |4 - x^2| + \boxed{C} x \sin^{-1} \frac{x}{2}}{(4 - x^2)(\log |4 - x^2|) \boxed{D}}$$

問 2. 次の不定積分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

ただし、解答用紙の s は sin、 c は cos、 ℓ は log を表す。

(1) $\int \cos^3 x \sin x \, dx = -\frac{1}{\boxed{A}} \boxed{B}^{\boxed{C}} x + C$

(2) $\int \frac{1}{x^2 + 2x + 5} \, dx = \frac{1}{\boxed{A}} \operatorname{Tan}^{-1} \frac{x + \boxed{B}}{\boxed{C}} + C$

(3) $\int (3x + 1) \cos 2x \, dx = \frac{(3x + 1)}{\boxed{A}} \boxed{B} 2x + \frac{3}{\boxed{C}} \boxed{D} 2x + C$

(4) $\int \frac{x + 7}{(x + 1)(x - 2)} = \boxed{A} \left| \frac{(x - \boxed{B})^{\boxed{C}}}{(x + \boxed{D})^{\boxed{E}}} \right| + C$

期末試験 No. 2

問3. $f(x) = \log(1+x)$ のマクローリン展開の3次項 $\frac{\boxed{B}}{\boxed{A}}x^3$ の係数を求めよ。

問4. 次の定積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

$$(1) \int_0^{\sqrt[3]{\frac{\pi}{3}}} x^2 \sin x^3 dx = \frac{\boxed{A}}{\boxed{B}}$$

$$(2) \int_0^{\frac{\pi}{9}} x \sin 3x dx = \frac{\boxed{A}\sqrt{3} - \boxed{B}}{54}$$

$$(3) \int_{-2}^{-\frac{1}{2}} \frac{1}{\sqrt{5-4x-x^2}} dx = \frac{\boxed{A}}{\boxed{B}}$$

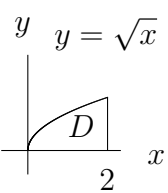
問5. 次の偏微分を計算し、空欄を 1, 2, 3, 4, x , x^2 , y , y^2 で埋めよ。

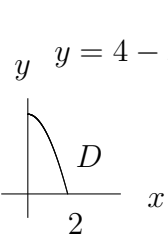
$$(1) z = \sqrt{x^4 + 2x^3y^2 + y^3}, \quad \frac{\partial z}{\partial x} = \frac{\boxed{A}x^3 + \boxed{B}x^2y^2}{\sqrt{x^4 + 2x^3y^2 + y^3}}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{C}x^3y + \boxed{D}y^2}{2\sqrt{x^4 + 2x^3y^2 + y^3}}$$

$$(2) z = x^2ye^{3x+y^2}, \quad z_x = (2\boxed{A} + 3\boxed{B})ye^{3x+y^2}, \quad z_y = (\boxed{C} + 2\boxed{D})x^2e^{3x+y^2}$$

$$(3) z = \text{Sin}^{-1} \frac{y}{x}, \quad \frac{\partial z}{\partial x} = -\frac{\boxed{B}}{\boxed{A}\sqrt{x^2 - y^2}}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{D}}{\sqrt{x^2 - \boxed{C}}}$$

問 6. 次の重積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

(1)  $\iint_D xy \, dS = \frac{\boxed{A}}{\boxed{B}}$

(2)  $\iint_D \frac{2}{(y + x^2 + 4)^2} \, dS = \frac{\boxed{A} - \boxed{B}}{\boxed{C}}$

問 7. 次の微分方程式を解き、空欄を 2, 3, 4, x , x^2 , x^3 , \cos , \sin で埋めよ。

ただし、解答用紙の c は \cos を、 s は \sin を表す。

(1) $x^2 y' = 2y$, 解 $y = Ae^{-\frac{\boxed{A}}{\boxed{B}}}$

(2) $y' = y \cos x + \frac{1}{\sqrt{x}} e^{\sin x}$, 解 $y = \boxed{A} \sqrt{\boxed{B}} e^{\boxed{C}x} + Ce^{\boxed{D}x}$

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0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

問 1(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(5)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

問 2(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ
E	1	2	3	4	5	s	c	ℓ

問 3

A	1	2	3	4	5	6	7	8
B	1	2	3	4	5	6	7	8
A	1	2	3	4	5	6	π	e

問 4(1)

B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e

(2)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(3)

問 5(1)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(2)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(3)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

問 6(1)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(2)

B	1	2	3	4	5	6	π	e
C	1	2	3	4	5	6	π	e
A	2	3	4	x	x ²	x ³	s	c

問 7(1)

B	2	3	4	x	x ²	x ³	s	c
A	2	3	4	x	x ²	x ³	s	c
B	2	3	4	x	x ²	x ³	s	c
C	2	3	4	x	x ²	x ³	s	c
D	2	3	4	x	x ²	x ³	s	c

(2)

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3	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③
4	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④
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6	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥
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9	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨

問 1(1)

<input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
(2) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
(3) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
(4) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
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<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
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<input type="radio"/> D	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
問 2(1) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
(2) <input type="radio"/> A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
(3) <input type="radio"/> A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
(4) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> D	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> E	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

問 3

<input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
問 4(1) <input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e
(2) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e
(3) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e
問 5(1) <input type="radio"/> A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
(2) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> C	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input checked="" type="radio"/>
(3) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input checked="" type="radio"/>	<input type="radio"/> y ²
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input checked="" type="radio"/>
<input type="radio"/> D	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
問 6(1) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
(2) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
問 7(1) <input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> c
<input type="radio"/> B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> c
(2) <input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> c
<input type="radio"/> B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> c
<input type="radio"/> C	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input checked="" type="radio"/>	<input type="radio"/> c
<input type="radio"/> D	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input checked="" type="radio"/>	<input type="radio"/> c

微積分半期演習期末試験 2 解答

問 1

- (1) $A = \cos$, $B = \sin$, $C = 3$,
- (2) $A = 3$, $B = 2$, $C = \sin$,
- (3) $A = 3$, $B = 4$, $C = 3$, $D = 2$,
- (4) $A = 3$, $B = 2$, $C = \sin$, $D = 2$,
- (5) $A = 4$, $B = \log$, $C = 2$, $D = 2$

問 2

- (1) $A = 4$, $B = \cos$, $C = 4$,
- (2) $A = 2$, $B = 1$, $C = 2$,
- (3) $A = 2$, $B = \sin$, $C = 4$, $D = \cos$,
- (4) $A = \log$, $B = 2$, $C = 3$, $D = 1$, $E = 2$

問 3

$$A = 3, B = 1,$$

問 4

- (1) $A = 1$, $B = 6$,
- (2) $A = 3$, $B = \pi$,
- (3) $A = \pi$, $B = 6$,

問 5

- (1) $A = 2$, $B = 3$, $C = 4$, $D = 3$,
- (2) $A = x$, $B = x^2$, $C = 1$, $D = y^2$,
- (3) $A = x$, $B = y$, $C = y^2$, $D = 1$,

問 6

- (1) $A = 4$, $B = 3$,
- (2) $A = \pi$, $B = 2$, $C = 4$

問 7

- (1) $A = 2$, $B = x$,
- (2) $A = 2$, $B = x$, $C = \sin$, $D = \sin$

期末試験 No. 1

問1. 次の微分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

なお、解答欄の s は sin, c は cos, ℓ は log を表す。

$$(1) \frac{d}{dx} \left(\sqrt[3]{\sin x} \right) = \frac{\boxed{A} x}{3 \sqrt[3]{\boxed{B} x \boxed{C}}}$$

$$(2) \left(e^{2x} \cos 3x \right)' = e^{2x} (\boxed{A} \cos 3x - \boxed{B} \boxed{C} 3x)$$

$$(3) \frac{d}{dx} \left(\log(x^2 + 4) \tan^{-1} \frac{x}{2} \right) = \frac{\boxed{A} x \tan^{-1} \frac{x}{2} + \boxed{B} \boxed{C} (x^2 + \boxed{D})}{x^2 + 4}$$

$$(4) \left(\frac{\sin^{-1} \frac{x}{2}}{e^{3x}} \right)' = \frac{\boxed{A} - \boxed{B} \sqrt{\boxed{C} - x^2} \sin^{-1} \frac{x}{2}}{e^{\boxed{D} x} \sqrt{\boxed{C} - x^2}}$$

$$(5) \frac{d}{dx} \left(\frac{\log |x^3 + 1|}{\sin 2x} \right) = \frac{\boxed{A} x^2 \sin 2x - \boxed{B} (x^3 + 1) \log |x^3 + 1| \boxed{C} 2x}{(x^3 + 1) \sin \boxed{D} 2x}$$

問 2. 次の不定積分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

ただし、解答用紙の s は sin、 c は cos、 ℓ は log を表す。

(1) $\int \cos x \sin^4 x \, dx = \frac{1}{\boxed{A}} \boxed{B}^{\boxed{C}} x + C$

(2) $\int \frac{1}{x\{(\log |x|)^2 + 4\}} \, dx = \frac{1}{\boxed{A}} \operatorname{Tan}^{-1} \frac{\boxed{B} |x|}{\boxed{C}} + C$

(3) $\int x^2 \sin 2x \, dx = -\frac{x^2}{2} \boxed{A} 2x + \frac{x}{2} \boxed{B} 2x + \frac{1}{\boxed{C}} \boxed{D} 2x + C$

(4) $\int \frac{2x + 8}{(x - 2)(x + 1)} \, dx = \boxed{A} \left| \frac{(x - \boxed{B})^{\boxed{C}}}{(x + \boxed{D})^{\boxed{E}}} \right| + C$

期末試験 No. 2

問 3. $f(x) = \sin 2x$ のマクローリン展開の 3 次項 $-\frac{\boxed{B}}{\boxed{A}}x^3$ の係数を求めよ。

問 4. 次の定積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

$$(1) \int_0^{\frac{\pi^2}{9}} \frac{\sin \sqrt{x}}{3\sqrt{x}} dx = \frac{\boxed{A}}{\boxed{B}}$$

$$(2) \int_0^1 (3x-1)e^{2x} dx = \frac{e^2 + \boxed{A}}{\boxed{B}}$$

$$(3) \int_1^2 \frac{1}{\sqrt{3+2x-x^2}} dx = \frac{\boxed{A}}{\boxed{B}}$$

問 5. 次の偏微分を計算し、空欄を 1, 2, 3, 4, x , x^2 , y , y^2 で埋めよ。

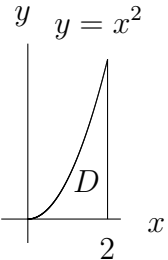
$$(1) z = \log |x^3 + x^2y + y^4|, \quad \frac{\partial z}{\partial x} = \frac{\boxed{A}x^2 + \boxed{B}xy}{x^3 + x^2y + y^4}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{C} + \boxed{D}y^3}{x^3 + x^2y + y^4}$$

$$(2) z = x^3ye^{2x+y^3}, \quad z_x = (\boxed{A}x + 2\boxed{B})xye^{2x+y^3}, \quad z_y = (\boxed{C} + \boxed{D}y^3)x^3e^{2x+y^3}$$

$$(3) z = \tan^{-1} \frac{y}{x}, \quad \frac{\partial z}{\partial x} = -\frac{\boxed{B}}{\boxed{A} + y^2}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{D}}{x^2 + \boxed{C}}$$

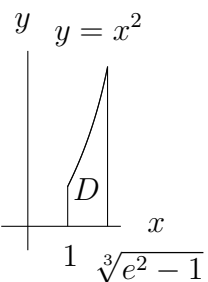
問 6. 次の重積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

(1)



$$\iint_D \frac{3}{32} x \sqrt{y} \, dS = \frac{\boxed{A}}{\boxed{B}}$$

(2)



$$\iint_D \frac{1}{x^3 + 1} \, dS = \frac{\boxed{A} - \log \boxed{B}}{\boxed{C}}$$

問 7. 次の微分方程式を解き、空欄を 2, 3, 4, x , x^2 , x^3 , \sin , \log で埋めよ。
ただし、解答用紙の s は \sin を、 ℓ は \log を表す。

(1)

$xy' = 2\sqrt{9 - y^2}, \quad \text{解 } y = \boxed{A} \boxed{B} (\boxed{C} x^2 + C)$

(2)

$x^2 y' = y + 2xe^{-\frac{1}{x}}, \quad \text{解 } y = e^{-\frac{1}{\boxed{A}}} \boxed{B} \boxed{C} + Ce^{-\frac{1}{\boxed{D}}}$

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0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

問 1(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(5)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

問 2(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ
E	1	2	3	4	5	s	c	ℓ

問 3

A	1	2	3	4	5	6	7	8
B	1	2	3	4	5	6	7	8
A	1	2	3	4	5	6	π	e

問 4(1)

B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e

(2)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(3)

問 5(1)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(2)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(3)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

問 6(1)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(2)

B	1	2	3	4	5	6	π	e
C	1	2	3	4	5	6	π	e
A	2	3	4	x	x ²	x ³	s	ℓ

問 7(1)

B	2	3	4	x	x ²	x ³	s	ℓ
C	2	3	4	x	x ²	x ³	s	ℓ
A	2	3	4	x	x ²	x ³	s	ℓ

(2)

B	2	3	4	x	x ²	x ³	s	ℓ
C	2	3	4	x	x ²	x ³	s	ℓ
D	2	3	4	x	x ²	x ³	s	ℓ

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2	<input type="radio"/> ②	<input type="radio"/> ②	<input type="radio"/> ②	<input type="radio"/> ②	<input type="radio"/> ②	<input type="radio"/> ②	<input type="radio"/> ②
3	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③	<input type="radio"/> ③
4	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④	<input type="radio"/> ④
5	<input type="radio"/> ⑤	<input type="radio"/> ⑤	<input type="radio"/> ⑤	<input type="radio"/> ⑤	<input type="radio"/> ⑤	<input type="radio"/> ⑤	<input type="radio"/> ⑤
6	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥	<input type="radio"/> ⑥
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9	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨	<input type="radio"/> ⑨

問 1(1)

<input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
(3) <input type="radio"/> A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
(4) <input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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(5) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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<input type="radio"/> D	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
問 2(1) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
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(2) <input type="radio"/> A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
<input type="radio"/> C	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
(3) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
(4) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> D	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
<input type="radio"/> E	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

問 3

<input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
問 4(1) <input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
(2) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
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<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e
問 5(1) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> B	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
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<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> C	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
(3) <input type="radio"/> A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> y	<input type="radio"/> y ²
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input checked="" type="radio"/>	<input type="radio"/> y ²
<input type="radio"/> C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input checked="" type="radio"/>
<input type="radio"/> D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
問 6(1) <input type="radio"/> A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
<input type="radio"/> B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
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問 7(1) <input type="radio"/> A	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> ℓ
<input type="radio"/> B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input checked="" type="radio"/>	<input type="radio"/> ℓ
<input type="radio"/> C	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input checked="" type="radio"/>
(2) <input type="radio"/> A	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> ℓ
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<input type="radio"/> D	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> ℓ

微積分半期演習期末試験 3 解答

問 1

- (1) $A = \cos$, $B = \sin$, $C = 2$,
- (2) $A = 2$, $B = 3$, $C = \sin$,
- (3) $A = 2$, $B = 2$, $C = \log$, $D = 4$,
- (4) $A = 1$, $B = 3$, $C = 4$, $D = 3$,
- (5) $A = 3$, $B = 2$, $C = \cos$, $D = 2$

問 2

- (1) $A = 5$, $B = \sin$, $C = 5$,
- (2) $A = 2$, $B = \log$, $C = 2$,
- (3) $A = \cos$, $B = \sin$, $C = 4$, $D = \cos$,
- (4) $A = \log$, $B = 2$, $C = 4$, $D = 1$, $E = 2$

問 3

$$A = 3, B = 4,$$

問 4

- (1) $A = 1$, $B = 3$,
- (2) $A = 5$, $B = 4$,
- (3) $A = \pi$, $B = 6$,

問 5

- (1) $A = 3$, $B = 2$, $C = x^2$, $D = 4$,
- (2) $A = 3$, $B = x^2$, $C = 1$, $D = 3$,
- (3) $A = x^2$, $B = y$, $C = y^2$, $D = x$,

問 6

- (1) $A = 2$, $B = 5$,
- (2) $A = 2$, $B = 2$, $C = 3$

問 7

- (1) $A = 3$, $B = \sin$, $C = \log$,
- (2) $A = x$, $B = \log$, $C = x^2$, $D = x$

期末試験 No.1

問1. 次の微分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

なお、解答欄の s は sin, c は cos, ℓ は log を表す。

$$(1) \frac{d}{dx} \left(\frac{1}{\sqrt{\cos x}} \right) = \frac{\boxed{A}x}{2\sqrt{\boxed{B}x^{\boxed{C}}}}$$

$$(2) (e^{3x} \sin 2x)' = e^{3x}(\boxed{A} \sin 2x + \boxed{B}\boxed{C} 2x)$$

$$(3) \frac{d}{dx} (e^{x^3} \log |x^4 + 1|) = \frac{\left\{ (\boxed{A}x^6 + \boxed{B}x^2) \log |x^4 + 1| + \boxed{C}x^{\boxed{D}} \right\} e^{x^3}}{(x^4 + 1)}$$

$$(4) \left(\frac{\tan^{-1} \frac{x}{3}}{\sin x^2} \right)' = \frac{\boxed{A} \sin x^2 - (\boxed{B}x^3 + 18x) \tan^{-1} \frac{x}{3} \boxed{C} x^2}{(x^2 + 9) \sin \boxed{D} x^2}$$

$$(5) \frac{d}{dx} \left(\frac{\sin^{-1} \frac{x}{3}}{e^{x^2}} \right) = \frac{\boxed{A} - \boxed{B}x\sqrt{\boxed{C}^2 - x^2} \sin^{-1} \frac{x}{\boxed{D}}}{e^{x^2} \sqrt{\boxed{C}^2 - x^2}}$$

問 2. 次の不定積分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

ただし、解答用紙の s は sin、 c は cos、 ℓ は log を表す。

(1) $\int x^3 \cos x^4 dx = \frac{1}{\boxed{A}} \boxed{B} x^{\boxed{C}} + C$

(2) $\int \frac{1}{x^2 - 2x + 10} dx = \frac{1}{\boxed{A}} \operatorname{Tan}^{-1} \frac{x - \boxed{B}}{\boxed{C}} + C$

(3) $\int (6x + 1) \sin 3x dx = -\frac{(6x + 1)}{\boxed{A}} \boxed{B} 3x + \frac{\boxed{C}}{\boxed{A}} \boxed{D} 3x + C$

(4) $\int \frac{2x + 1}{(x - 2)(x + 1)} dx = \frac{1}{\boxed{A}} \boxed{B} \left| (x - \boxed{C})^{\boxed{D}} (x + \boxed{E}) \right| + C$

期末試験 No. 2

問 3. $f(x) = \frac{1}{3}e^{3x}$ のマクローリン展開の 3 次項 $\frac{\boxed{B}}{\boxed{A}}x^3$ の係数を求めよ。

問 4. 次の定積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

$$(1) \int_0^{\frac{\pi}{6}} \sqrt{\sin x \cos x} dx = \frac{\sqrt{\boxed{A}}}{\boxed{B}}$$

$$(2) \int_0^{\frac{\pi}{9}} x \cos 3x dx = \frac{\boxed{A}\sqrt{3} - \boxed{B}}{54}$$

$$(3) \int_{-\sqrt{2}-1}^0 \frac{2}{\sqrt{3-2x-x^2}} dx = \frac{\boxed{A}}{\boxed{B}}\pi$$

問 5. 次の偏微分を計算し、空欄を 1, 2, 3, 4, x , x^2 , y , y^2 で埋めよ。

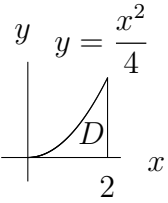
$$(1) z = \sqrt{x^3 + xy + y^2}, \quad \frac{\partial z}{\partial x} = \frac{3\boxed{A} + \boxed{B}}{2\sqrt{x^3 + xy + y^2}}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{C} + 2\boxed{D}}{2\sqrt{x^3 + xy + y^2}}$$

$$(2) z = xy^2 e^{2x+3y}, \quad z_x = (\boxed{A} + \boxed{B}xy^2)e^{2x+3y}, \quad z_y = (\boxed{C}xy + \boxed{D}xy^2)e^{2x+3y}$$

$$(3) z = \text{Sin}^{-1} \frac{x}{y}, \quad \frac{\partial z}{\partial x} = \frac{1}{\sqrt{\boxed{A} - \boxed{B}}}, \quad \frac{\partial z}{\partial y} = -\frac{\boxed{C}}{\boxed{D}\sqrt{\boxed{A} - \boxed{B}}}$$

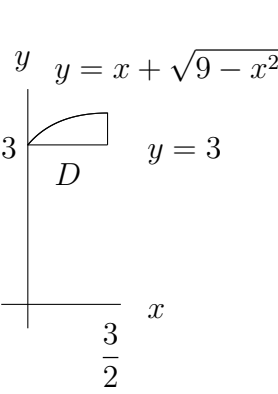
問6. 次の重積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

(1)



$$\iint_D \frac{3x^3}{16\sqrt{y}} dS = \frac{\boxed{A}}{\boxed{B}}$$

(2)



$$\iint_D \frac{1}{(y-x)^2} dS = \log \boxed{A} - \frac{\boxed{B}}{\boxed{C}}$$

問7. 次の微分方程式を解き、空欄を 2, 3, 4, x , x^2 , x^3 , \cos , \sin , \log で埋めよ。

ただし、解答用紙の c は \cos を、 s は \sin を、 ℓ は \log を表す。

(1)

$y' = y^2 \sin 2x,$

解

$y = \frac{\boxed{A}}{\boxed{B} \boxed{C} x + C}$

(2)

$xy' = 2y + \frac{x^4}{x^2 + 4},$

解

$y = \frac{\boxed{A}}{\boxed{B}} \boxed{C} (\boxed{D} + 4) + C \boxed{E}$

期末試験

学籍番号

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氏名

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0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

問 1(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(5)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

問 2(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ
E	1	2	3	4	5	s	c	ℓ

問 3

A	1	2	3	4	5	6	7	8
B	1	2	3	4	5	6	7	8
A	1	2	3	4	5	6	π	e

問 4(1)

B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e

(2)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(3)

問 5(1)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(2)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(3)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

問 6(1)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(2)

B	1	2	3	4	5	6	π	e
C	1	2	3	4	5	6	π	e
A	2	3	4	x	x ²	x ³	s	c

問 7(1)

B	2	3	4	x	x ²	x ³	s	c
C	2	3	4	x	x ²	x ³	s	c
A	2	3	4	x	x ²	x ³	x ⁴	ℓ

(2)

B	2	3	4	x	x ²	x ³	x ⁴	ℓ
C	2	3	4	x	x ²	x ³	x ⁴	ℓ
D	2	3	4	x	x ²	x ³	x ⁴	ℓ
E	2	3	4	x	x ²	x ³	x ⁴	ℓ

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問 1(1)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ

(3)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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(4)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
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(5)

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問 2(1)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input checked="" type="radio"/>	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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(3)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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(4)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
E	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

問 3

A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧
B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> ⑦	<input type="radio"/> ⑧

問 4(1)

A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e

(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e
B	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e

(3)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e

問 5(1)

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B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input checked="" type="radio"/>	<input type="radio"/> y ²
C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input checked="" type="radio"/>	<input type="radio"/> y ²

(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input checked="" type="radio"/>
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D	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²

(3)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input checked="" type="radio"/>
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input checked="" type="radio"/>	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
D	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input checked="" type="radio"/>	<input type="radio"/> y ²

問 6(1)

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(2)

C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> π	<input type="radio"/> e
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B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input checked="" type="radio"/>
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問 7(1)

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C	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> c
A	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> x ³	<input type="radio"/> x ⁴	<input type="radio"/> ℓ
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C	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> x ⁴	<input checked="" type="radio"/>
D	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> x ³	<input type="radio"/> x ⁴	<input type="radio"/> ℓ
E	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input checked="" type="radio"/>	<input type="radio"/> x ³	<input type="radio"/> x ⁴	<input type="radio"/> ℓ

(2)

微積分半期演習期末試験 4 解答

問 1

- (1) $A = \sin$, $B = \cos$, $C = 3$,
- (2) $A = 3$, $B = 2$, $C = \cos$,
- (3) $A = 3$, $B = 3$, $C = 4$, $D = 3$,
- (4) $A = 3$, $B = 2$, $C = \cos$, $D = 2$,
- (5) $A = 1$, $B = 2$, $C = 3$, $D = 3$

問 2

- (1) $A = 4$, $B = \sin$, $C = 4$,
- (2) $A = 3$, $B = 1$, $C = 3$,
- (3) $A = 3$, $B = \cos$, $C = 2$, $D = \sin$,
- (4) $A = 3$, $B = \log$, $C = 2$, $D = 5$, $E = 1$

問 3

$$A = 2, B = 3,$$

問 4

- (1) $A = 2$, $B = 6$,
- (2) $A = \pi$, $B = 3$,
- (3) $A = 5$, $B = 6$,

問 5

- (1) $A = x^2$, $B = y$, $C = x$, $D = y$,
- (2) $A = y^2$, $B = 2$, $C = 2$, $D = 3$,
- (3) $A = y^2$, $B = x^2$, $C = x$, $D = y$,

問 6

- (1) $A = 6$, $B = 5$,
- (2) $A = 2$, $B = \pi$, $C = 6$

問 7

- (1) $A = 2$, $B = \cos$, $C = 2$
- (2) $A = x^2$, $B = 2$, $C = \log$, $D = x^2$, $E = x^2$

期末試験 No.1

問1. 次の微分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

なお、解答欄の s は sin, c は cos, ℓ は log を表す。

$$(1) \frac{d}{dx} \left(\sqrt[5]{\cos x^2} \right) = - \frac{2 \boxed{A} x}{5 \sqrt[5]{\boxed{B} x} \boxed{C}}$$

$$(2) \left(e^{3x} \cos 4x \right)' = e^{3x} (\boxed{A} \cos 4x - \boxed{B} \boxed{C} 4x)$$

$$(3) \frac{d}{dx} \left(e^{3x} \log |x^2 + 1| \right) = \frac{ \left\{ (\boxed{A} x^2 + \boxed{B}) \boxed{C} |x^2 + 1| + \boxed{D} x \right\} e^{3x} }{ (x^2 + 1) }$$

$$(4) \left(\frac{\text{Tan}^{-1} \frac{x}{3}}{\cos x^2} \right)' = \frac{ \boxed{A} \cos x^2 + (\boxed{B} x^3 + 18x) \text{Tan}^{-1} \frac{x}{3} \boxed{C} x^2 }{ (x^2 + 9) \cos \boxed{D} x^2 }$$

$$(5) \frac{d}{dx} \left(\frac{\text{Sin}^{-1} \frac{x}{2}}{\log |4 - x^2|} \right) = \frac{ \sqrt{\boxed{A} - x^2} \boxed{B} |4 - x^2| + \boxed{C} x \text{Sin}^{-1} \frac{x}{2} }{ (4 - x^2)(\log |4 - x^2|) \boxed{D} }$$

問 2. 次の不定積分を計算し、空欄を 1, 2, 3, 4, 5, sin, cos, log で埋めよ。

ただし、解答用紙の s は sin、 c は cos、 ℓ は log を表す。

$$(1) \int \cos x \sin^2 x \, dx = \frac{1}{\boxed{A}} \boxed{B}^{\boxed{C}} x + C$$

$$(2) \int \frac{3x\{\log(x^2+1)\}^2}{(x^2+1)} \, dx = \frac{1}{\boxed{A}} \{\boxed{B}(x^2+1)\}^{\boxed{C}} + C$$

$$(3) \int (2x+1) \sin 2x \, dx = -\frac{(2x+1)}{\boxed{A}} \boxed{B} 2x + \frac{1}{\boxed{C}} \boxed{D} 2x + C$$

$$(4) \int \frac{x-1}{(x+1)(x-2)} \, dx = \frac{1}{\boxed{A}} \boxed{B} \left| (x+\boxed{C})^{\boxed{D}} (x-\boxed{E}) \right| + C$$

期末試験 No.2

問3. $f(x) = \frac{1}{6} \cos 3x$ のマクローリン展開の2次項 $-\frac{\boxed{B}}{\boxed{A}}x^2$ の係数を求めよ。

問4. 次の定積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

$$(1) \int_1^3 \frac{x}{4\sqrt[3]{x^2-1}} dx = \frac{\boxed{A}}{\boxed{B}}$$

$$(2) \int_1^{e^{\frac{\pi}{3}}} \frac{\sin(\log x)}{x} dx = \frac{\boxed{A}}{\boxed{B}}$$

$$(3) \int_1^3 \frac{2}{x^2-2x+5} dx = \frac{\boxed{A}}{\boxed{B}}$$

問5. 次の偏微分を計算し、空欄を 1, 2, 3, 4, x , x^2 , y , y^2 で埋めよ。

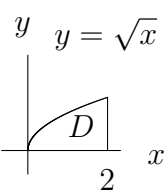
$$(1) z = \log |x^3 + xy^2 + y^2|, \quad \frac{\partial z}{\partial x} = \frac{3\boxed{A} + \boxed{B}}{x^3 + xy^2 + y^2}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{C}xy + 2\boxed{D}}{x^3 + xy^2 + y^2}$$

$$(2) z = xye^{3x+y^2}, \quad z_x = (1 + \boxed{A}x) \boxed{B} e^{3x+y^2}, \quad z_y = (1 + \boxed{C}y^2) \boxed{D} e^{3x+y^2}$$

$$(3) z = \text{Tan}^{-1} \frac{y}{x}, \quad \frac{\partial z}{\partial x} = -\frac{\boxed{A}}{\boxed{B} + y^2}, \quad \frac{\partial z}{\partial y} = \frac{\boxed{C}}{x^2 + \boxed{D}}$$

問 6. 次の重積分を計算し、空欄を 1, 2, 3, 4, 5, 6, π , e で埋めよ。

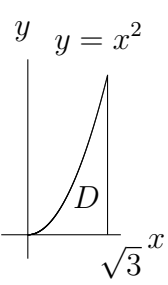
(1)



A graph showing the region D in the first quadrant. The region is bounded by the curve $y = \sqrt{x}$ and the x-axis, extending from $x = 0$ to $x = 2$. The x-axis is labeled with 2 at the right end. The y-axis is labeled with y at the top. The curve is labeled $y = \sqrt{x}$. The region is labeled D .

$$\iint_D \frac{1}{12} x^2 y \, dS = \frac{\boxed{A}}{\boxed{B}}$$

(2)



A graph showing the region D in the first quadrant. The region is bounded by the curve $y = x^2$ and the x-axis, extending from $x = 0$ to $x = \sqrt{3}$. The x-axis is labeled with $\sqrt{3}$ at the right end. The y-axis is labeled with y at the top. The curve is labeled $y = x^2$. The region is labeled D .

$$\iint_D \frac{3}{(y - x^2 - 9)^2} \, dS = \frac{\boxed{A} \sqrt{3} - \boxed{B}}{\boxed{C}}$$

問 7. 次の微分方程式を解き、空欄を 2, 3, 4, x , x^2 , x^3 , \sin , \cos , \log で埋めよ。

ただし、解答用紙の s は \sin を、 c は \cos を、 ℓ は \log を表す。

(1)

$y' = e^{2y} x^3, \quad \text{解 } y = -\frac{1}{2} \boxed{A} \left(C - \frac{\boxed{B}}{\boxed{C}} \right)$

(2)

$xy' = 3y - x^5 \sin x^2, \quad \text{解 } y = \frac{\boxed{A}}{\boxed{B}} \boxed{C} \boxed{D} + C \boxed{E}$

期末試験

学籍番号

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氏名

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0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
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3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

問 1(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(5)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

問 2(1)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(2)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ

(3)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ

(4)

A	1	2	3	4	5	s	c	ℓ
B	1	2	3	4	5	s	c	ℓ
C	1	2	3	4	5	s	c	ℓ
D	1	2	3	4	5	s	c	ℓ
E	1	2	3	4	5	s	c	ℓ

問 3

A	1	2	3	4	5	6	7	8
B	1	2	3	4	5	6	7	8
A	1	2	3	4	5	6	π	e

問 4(1)

B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e

(2)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(3)

問 5(1)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(2)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

(3)

A	1	2	3	4	x	x ²	y	y ²
B	1	2	3	4	x	x ²	y	y ²
C	1	2	3	4	x	x ²	y	y ²
D	1	2	3	4	x	x ²	y	y ²

問 6(1)

A	1	2	3	4	5	6	π	e
B	1	2	3	4	5	6	π	e
A	1	2	3	4	5	6	π	e

(2)

B	1	2	3	4	5	6	π	e
C	1	2	3	4	5	6	π	e
A	2	3	4	x	x ²	x ³	x ⁴	ℓ

問 7(1)

B	2	3	4	x	x ²	x ³	x ⁴	ℓ
C	2	3	4	x	x ²	x ³	x ⁴	ℓ
A	2	3	4	x	x ²	x ³	s	c

(2)

B	2	3	4	x	x ²	x ³	s	c
C	2	3	4	x	x ²	x ³	s	c
D	2	3	4	x	x ²	x ³	s	c
E	2	3	4	x	x ²	x ³	s	c

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問 1(1)

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B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input checked="" type="radio"/>	<input type="radio"/> ℓ
C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

問 3

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(2)

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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input checked="" type="radio"/>	<input type="radio"/> c	<input type="radio"/> ℓ

問 4(1)

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(3)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
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C	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>

(2)

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(4)

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問 5(1)

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(5)

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(2)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²
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C	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> y	<input type="radio"/> y ²

問 2(1)

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C	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

問 6(1)

A	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input type="radio"/> π	<input type="radio"/> e
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(2)

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(2)

A	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> ⑥	<input checked="" type="radio"/>	<input type="radio"/> e
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(3)

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問 7(1)

A	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> x ⁴	<input checked="" type="radio"/>
B	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input checked="" type="radio"/>	<input type="radio"/> ℓ
C	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> x ⁴	<input type="radio"/> ℓ

(4)

A	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ
B	<input type="radio"/> ①	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input checked="" type="radio"/>
C	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> ⑤	<input type="radio"/> s	<input type="radio"/> c	<input type="radio"/> ℓ

(2)

A	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input checked="" type="radio"/>	<input type="radio"/> s	<input type="radio"/> c
B	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input type="radio"/> c
C	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④	<input type="radio"/> x	<input type="radio"/> x ²	<input type="radio"/> x ³	<input type="radio"/> s	<input checked="" type="radio"/>

微積分半期演習期末試験 5 解答

問 1

- (1) $A = \sin$, $B = \cos$, $C = 3$,
- (2) $A = 3$, $B = 4$, $C = \sin$,
- (3) $A = 3$, $B = 3$, $C = \log$, $D = 2$,
- (4) $A = 3$, $B = 2$, $C = \sin$, $D = 2$
- (5) $A = 4$, $B = \log$, $C = 2$, $D = 2$

問 2

- (1) $A = 3$, $B = \sin$, $C = 3$,
- (2) $A = 2$, $B = \log$, $C = 3$,
- (3) $A = 2$, $B = \cos$, $C = 2$, $D = \sin$,
- (4) $A = 3$, $B = \log$, $C = 1$, $D = 2$, $E = 2$

問 3

$$A = 4 \quad B = 3$$

問 4

- (1) $A = 3$, $B = 4$,
- (2) $A = 1$, $B = 2$,
- (3) $A = \pi$, $B = 4$,

問 5

- (1) $A = x^2$, $B = y^2$, $C = 2$, $D = y$,
- (2) $A = 3$, $B = y$, $C = 2$, $D = x$,
- (3) $A = y$, $B = x^2$, $C = x$, $D = y^2$,

問 6

- (1) $A = 1$, $B = 6$,
- (2) $A = 2$, $B = \pi$, $C = 6$

問 7 (1) $A = \log$, $B = x^4$, $C = 2$

(2) $A = x^3$, $B = 2$, $C = \cos$, $D = x^2$, $E = x^3$