H23 産技①

1 (1) $\frac{2}{3} \times \frac{5}{4} - \left(-\frac{1}{6}\right)^2$

$= \frac{5}{6} - \frac{1}{36}$

$= \frac{30}{36} - \frac{1}{36}$

$= \frac{29}{36}$ //

(2) $\sqrt{24} \times \frac{1}{\sqrt{3}} - \sqrt{3} \times (-\sqrt{6})$

$= 2\sqrt{2} + 3\sqrt{2}$

$= 5\sqrt{2}$ //

(3) $(2a^2b)^2 \times (-3ab) \div (-a^3b^2)$

$= \frac{4a^4b^2 \times (-3ab)}{-a^3b^2}$

$= 12a^2b$ //

(4) $\frac{4a-7b}{3} - a + 2b$

$= \frac{4a-7b-3a+6b}{3}$

$= \frac{a-b}{3}$ //

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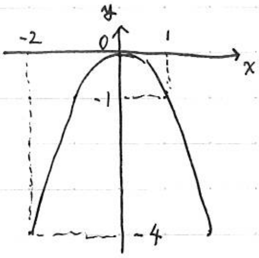
H29 産技②

1 (5)
$$\begin{cases} 2x + y = 8 \\ 4x - 3y = 6 \end{cases}$$
$$\begin{cases} 6x + 3y = 24 \\ 4x - 3y = 6 \end{cases}$$
$$10x = 30$$
$$\therefore x = 3$$
$$2 \times 3 + y = 8$$
$$\therefore y = 2$$
$$\therefore \underline{x = 3,\ y = 2}$$

(6) $(x+1)^2 - 2(x+5)$
$$= x^2 + 2x + 1 - 2x - 10$$
$$= x^2 - 9$$
$$= \underline{(x+3)(x-3)}$$

(7)



$$-(-2)^2 = -4$$
$$-0^2 = 0$$
$$\therefore \underline{-4 \leqq y \leqq 0}$$

H23産技③

$\boxed{2}$ (1) $7\sqrt{5} = \sqrt{245}$

$9\sqrt{3} = \sqrt{243}$

$\therefore \underline{9\sqrt{3} < 7\sqrt{5}}$ //

(2) $(-4)^2 + 3a \times (-4) + 2a = 0$

$16 - 12a + 2a = 0$

$\therefore \underline{a = \frac{8}{5}}$ //

(3) y軸対称

$y = ax^2$

$\therefore$ イ，エ //

(4) 16

24

32

56

64 $\quad \therefore \underline{\frac{5}{36}}$ //

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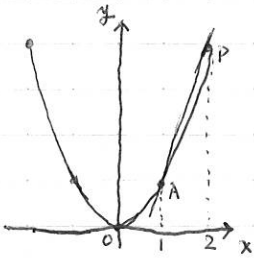
H23産技④

3 (1)



$y = \frac{1}{2} \times 1^2$

$= \frac{1}{2}$

$\therefore A(1, \frac{1}{2})$

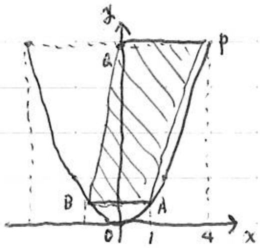
$y = \frac{1}{2} \times 2^2$

$= 2$

$\therefore P(2, 2)$

$\therefore y = \frac{3}{2}x - 1$

(2)



$A(1, \frac{1}{2})$

$B(-1, \frac{1}{2})$

$y = \frac{1}{2} \times 4^2$

$= 8$

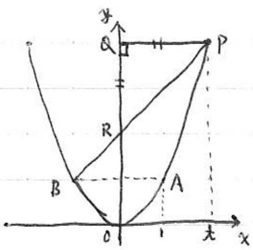
$\therefore P(4, 8)$

$\therefore Q(0, 8)$

$APQB = \{(4-0) + 1 - (-1)\} \times (8 - \frac{1}{2}) \div 2$

$= \frac{45}{2}$ cm^2

(3)



$A(1, \frac{1}{2})$

$B(-1, \frac{1}{2})$

$P(t, \frac{1}{2}t^2)$

$Q(0, \frac{1}{2}t^2)$

$BP: \quad y = \dfrac{\frac{1}{2}t^2 - \frac{1}{2}}{t - (-1)}x + b$

$= \frac{1}{2}(t - 1)x + b$

点Bを通るので

$\frac{1}{2} = \frac{1}{2}(t - 1) \times (-1) + b$

$\therefore b = \frac{1}{2}t$

$\therefore R(0, \frac{1}{2}t)$

$PQ = QR$

$t - 0 = \frac{1}{2}t^2 - \frac{1}{2}t$

$2t = t^2 - t$

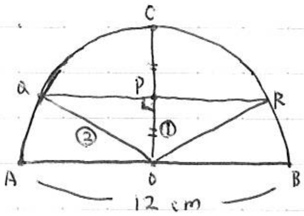
$t^2 - 3t = 0$

$t(t - 3) = 0$

$\therefore t = 3 \quad (\because t > 1)$

H23産技⑤

$\boxed{4}$ (1)



$OP : OQ = 1 : 2$

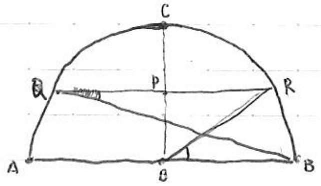
$\angle OPQ = 90°$

$\therefore \angle POQ = 60°$

$\overset{\frown}{QR} = 12\pi \times \dfrac{60° \times 2}{360°}$

$= \underline{4\pi \text{ cm}}$

(2)



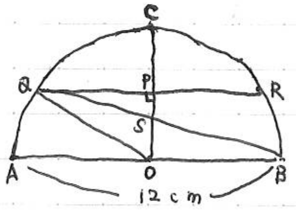
$\angle BOR = 90° - 60°$

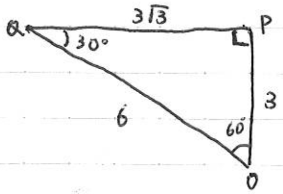
$= 30°$

$\angle BQR = 30° \div 2$

$= \underline{15°}$

(3)





$PQ = (12 \div 2) \div 2 \times \sqrt{3}$

$= 3\sqrt{3}$

$\triangle PSQ \sim \triangle OSB$

$PS : OS = PQ : OB$

$= 3\sqrt{3} : (12 \div 2)$

$= 3\sqrt{3} : 6$

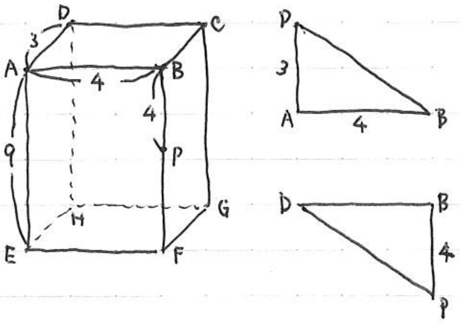
$= \dfrac{3\sqrt{3}}{6} : \dfrac{6}{6}$

$= \dfrac{\sqrt{3}}{2} : 1$

$\therefore \underline{\dfrac{\sqrt{3}}{2}\text{倍}}$

H23産技⑥

5 (1)



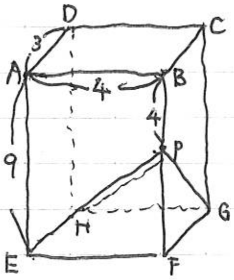
$BD = \sqrt{4^2 + 3^2}$

$= 5$

$PD = \sqrt{5^2 + 4^2}$

$= \sqrt{41}\ \text{cm}$ //

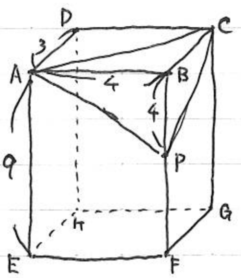
(2)

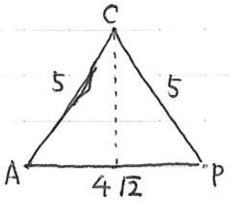


$3 \times 4 \times (9 - 4) \div 3$

$= 20\ \text{cm}^3$ //

(3)





$AC = \sqrt{4^2 + 3^2}$

$= 5$

$AP = \sqrt{4^2 + 4^2}$

$= 4\sqrt{2}$

$PC = \sqrt{3^2 + 4^2}$

$= 5$

$\sqrt{5^2 - (4\sqrt{2} \div 2)^2} = \sqrt{17}$

$\triangle PAC = 4\sqrt{2} \times \sqrt{17} \div 2$

$= 2\sqrt{34}\ \text{cm}^2$ //