

H 2 7 產 技 ①

$$\begin{aligned}
 \text{II (1)} \quad & \frac{7}{8} \div \frac{5}{12} + \left( \frac{9}{5} - 3 \right) \\
 &= \frac{7}{8} \times \frac{12}{5} + \left( \frac{9}{5} - \frac{15}{5} \right) \\
 &= \frac{21}{10} - \frac{6}{5} \\
 &= \frac{21}{10} - \frac{12}{10} \\
 &= \frac{9}{10} \quad \#
 \end{aligned}$$

$$\begin{aligned}
 \text{(2)} \quad & 4a^2b^2 \times \left( \frac{a}{6b} \right)^2 \div (-a)^3 \\
 &= \frac{4a^2b^2}{1} \times \frac{a^2}{36b^2} \times \frac{1}{-a^3} \\
 &= -\frac{a}{9} \quad \#
 \end{aligned}$$

$$\begin{aligned}
 \text{(3)} \quad & (2\sqrt{3} + \sqrt{5})(2\sqrt{3} - \sqrt{5}) + (4 + \sqrt{2})^2 \\
 &= (2\sqrt{3})^2 - (\sqrt{5})^2 + \{4^2 + 2 \cdot 4 \cdot \sqrt{2} + (\sqrt{2})^2\} \\
 &= 12 - 5 + (16 + 8\sqrt{2} + 2) \\
 &= 7 + 18 + 8\sqrt{2} \\
 &= 25 + 8\sqrt{2} \quad \#
 \end{aligned}$$

$$\begin{aligned}
 \text{(4)} \quad & \begin{cases} 7x - 2y + 9 = 0 \\ 3x + 4y - 1 = 0 \\ 14x - 4y + 18 = 0 \\ 3x + 4y - 1 = 0 \end{cases} \\
 & \hline
 & 17x \qquad \qquad + 17 = 0 \\
 & \therefore x = -1 \\
 & 3x(-1) + 4y - 1 = 0 \\
 & 4y = 4 \\
 & \therefore y = 1 \\
 & \therefore x = -1, y = 1 \quad \#
 \end{aligned}$$

H 2 7 產 技 ②

$$\text{II (5)} \quad (x - 4)^2 - 10 = 3(1 - x)$$

$$x^2 - 8x + 16 - 10 = 3 - 3x$$

$$x^2 - 5x + 3 = 0$$

$$\therefore x = \frac{5 \pm \sqrt{5^2 - 4 \cdot 1 \cdot 3}}{2}$$

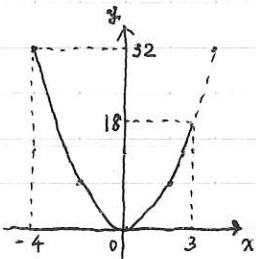
$$= \frac{5 \pm \sqrt{13}}{2} \quad \text{H}$$

$$(6) \quad (a + 2)^2 - 3(a + 2) + 4$$

$$= \{(a + 2) - 4\} \{(a + 2) - 1\}$$

$$= \underline{(a - 2)(a + 1)} \quad \text{H}$$

(7)



$$y = 2 \times (-4)^2$$

$$= 32$$

$$y = 2 \times 0^2$$

$$= 0$$

$$\therefore \underline{0 \leq y \leq 32} \quad \text{H}$$

## H 2 7 產技 ③

$$\textcircled{2} (1) \quad y = \frac{6a}{x}$$

x	1	3
y	6a	2a

$$\frac{2a - 6a}{3 - 1} = 8$$

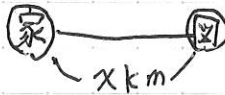
$$-2a = 8$$

$$\therefore a = -4$$

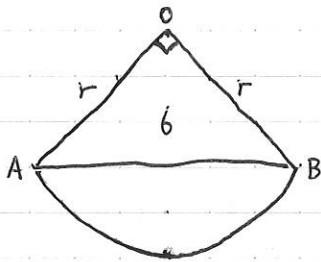
$$(2) \quad \frac{x}{4} = \frac{x}{9} + \frac{30}{60}$$

$$9x = 4x + 18$$

$$\therefore x = \frac{18}{5} \text{ km}$$



(3)



$$\frac{1}{2} r^2 = 6$$

$$\therefore r^2 = 12$$

$$\pi r^2 \times \frac{90}{360}$$

$$= \pi \times 12 \times \frac{1}{4}$$

$$= 3\pi \text{ cm}^2$$

(4)

冊數	人數
0	1
1	4
2	4
3	4
4	5
5	2
合計	20

$$\text{平均值} = (0 \times 1 + 1 \times 4 + 2 \times 4 + 3 \times 4 + 4 \times 5 + 5 \times 2) \div 20$$

$$= 2.7$$

$$\text{最頻值} = 4$$

$$\text{中央值} = 0, 1, 1, 1, 1, 2, 2, 2, 2, \textcircled{3},$$

$$\textcircled{3}, 3, 3, 4, 4, 4, 4, 4, 5, 5$$

$$= 3$$

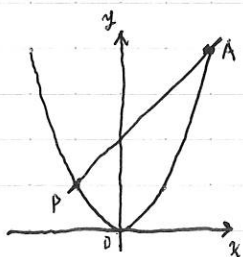
$$4 \text{冊以上} = (5 + 2) \div 20 \times 100$$

$$= 35$$

$\therefore$

## H 27 産技④

③(1)



$$y = x^2$$

$$A(2, 4)$$

$$P(-1, 1)$$

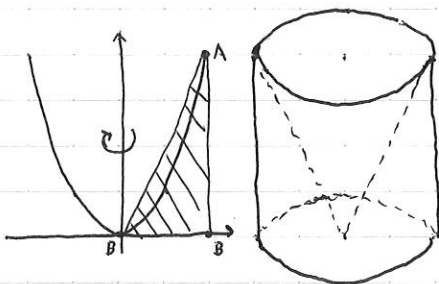
$$y = ax + b$$

$$a = 1$$

$$b = 2$$

$$\therefore y = x + 2$$

(2)



$$\text{円柱} = (2^2 \pi) \times 4$$

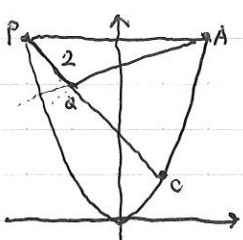
$$= 16 \pi$$

$$\text{円錐} = \frac{1}{3} \times (2^2 \pi) \times 4$$

$$= \frac{16}{3} \pi$$

$$16 \pi - \frac{16}{3} \pi = \frac{32}{3} \pi \text{ cm}^3$$

(3)



$$A(2, 4)$$

$$C(1, 1)$$

$$P(-2, 4)$$

$$\triangle APQ = \frac{1}{2} \times AP \times h$$

$$2 = \frac{1}{2} \times 4 \times h$$

$$\therefore h = 1$$

$$Q \text{ の } y \text{ 座標} = 4 - 1$$

$$= 3$$

$$CP: y = -x + 2$$

$$3 = -x + 2$$

$$\therefore x = -1$$

$$\therefore Q(-1, 3)$$

$$AQ: y = \frac{1}{3}x + \frac{10}{3}$$

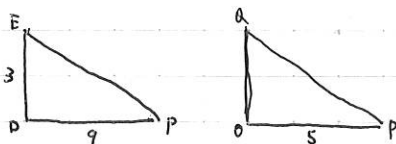
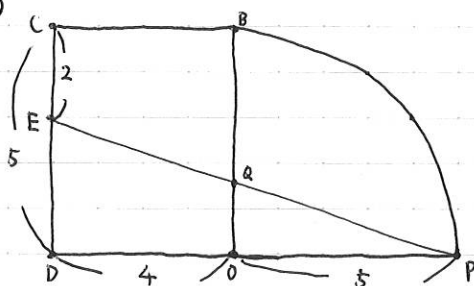
$$0 = \frac{1}{3}x + \frac{10}{3}$$

$$\therefore x = -10$$

$$\therefore (-10, 0)$$

## H 2 7 産 技 ⑤

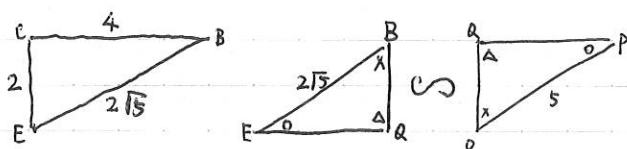
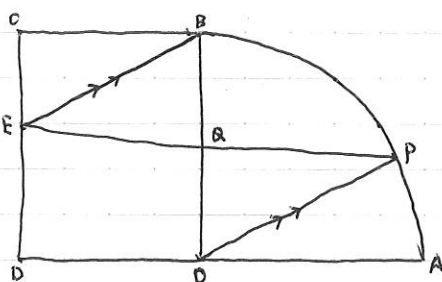
4 (1)



$$3 : 9 = OQ : 5$$

$$\therefore OQ = \frac{5}{3} \text{ cm}$$

(2)



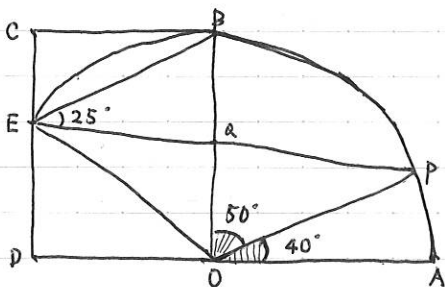
$$BE = \sqrt{4^2 + 2^2} = 2\sqrt{5}$$

$$OP = 5$$

$$\text{相似比 } 2\sqrt{5} : 5 = 2 : \sqrt{5}$$

$$\text{面積比 } 2^2 : \sqrt{5}^2 = 4 : 5$$

(3)



$OE = \sqrt{4^2 + 3^2} = 5 = OP$   
 であるから、点 E は円周上に  
 あるので、

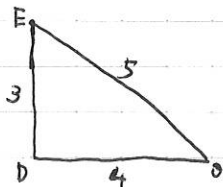
$$\angle BOP = 2 \angle BEP = 50^\circ$$

$$\angle AOP = 90^\circ - 50^\circ = 40^\circ$$

となり、

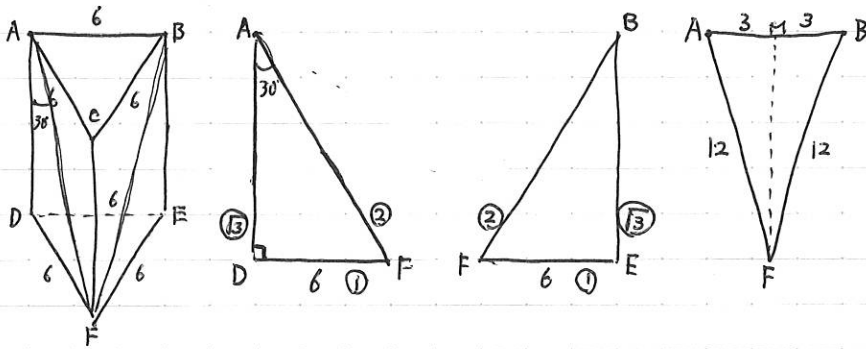
$$\widehat{AP} = 2 \times 5 \pi \times \frac{40^\circ}{360^\circ}$$

$$= \frac{10}{9} \pi \text{ cm}$$



H 2 7 産 技 ⑥

5 (1)



$$AF = BF = 6 \times 2 = 12$$

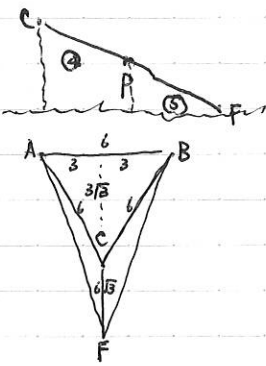
AB の中点を M とする

$$AM = BM = 3$$

$$FM = \sqrt{12^2 - 3^2} = 3\sqrt{15}$$

$$\begin{aligned} \Delta ABF &= 6 \times 3\sqrt{15} \div 2 \\ &= 9\sqrt{15} \text{ cm}^2 \end{aligned}$$

(2)



P-ABF と C-ABF は底面積が同じで高さの比が 5 : 9 であるから、体積比も 5 : 9 となる。

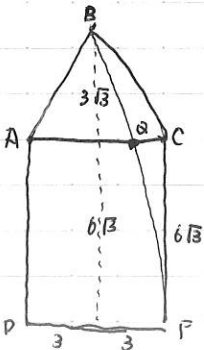
C-ABF の体積は F-ABC として

$$(6 \times 3\sqrt{3} \div 2) \times 6\sqrt{3} \div 3 = 54$$

となり、P-ABF の体積は

$$54 \div 9 \times 5 = 30 \text{ cm}^3$$

(3)



$$\begin{aligned} & \frac{BQ + QF}{=} \\ &= \sqrt{(3\sqrt{3} + 6\sqrt{3})^2 + 3^2} \\ &= 3\sqrt{(3\sqrt{3})^2 + 1^2} \\ &= 3\sqrt{28} \\ &= 3 \times 2\sqrt{7} \\ &= 6\sqrt{7} \text{ cm} \end{aligned}$$