

R02産技①

$$\begin{aligned} \text{II (1)} \quad & \left(\frac{3}{7} - \frac{5}{6}\right) \times \frac{-2+4+6}{2-3+4} \\ & = \left(\frac{9}{12} - \frac{10}{12}\right) \times \frac{8}{3} \\ & = -\frac{1}{12} \times \frac{8}{3} \\ & = -\frac{2}{9} \end{aligned}$$

$$\begin{aligned} \text{(2)} \quad & 3 \times 2^3 \times \left(-\frac{1}{8}\right)^2 \\ & = 3 \times 8 \times \frac{1}{86} \\ & = \frac{2}{3} \end{aligned}$$

$$\begin{aligned} \text{(3)} \quad & a + \frac{b}{3} - \frac{5a+2b}{5} \\ & = \frac{15}{15}a + \frac{5}{15}b - \frac{15}{15}a - \frac{6}{15}b \\ & = -\frac{b}{15} \end{aligned}$$

$$\text{(4)} \quad \begin{cases} 2x + 3y = 42 \\ x - 2y = -7 \end{cases}$$

$$\begin{cases} 4x + 6y = 84 \\ 3x - 6y = -21 \end{cases}$$

$$7x = 63$$

$$x = 9$$

$$9 - 2y = -7$$

$$y = 8$$

$$\therefore x = 9, y = 8$$

$$\begin{aligned} \text{(5)} \quad & (2a + b)^2 + (a - 2b)^2 \\ & = 4a^2 + 4ab + b^2 + a^2 - 4ab + 4b^2 \\ & = 5(a^2 + b^2) \\ & = 5\left\{\left(\frac{15}{2}\right)^2 + \left(\frac{1}{2}\right)^2\right\} \\ & = 5\left(\frac{3}{4} + \frac{1}{4}\right) \\ & = 5 \end{aligned}$$

R 0 2 產 技 ②

$$\boxed{1} (6) (x+3)^2 - 5(x+4) - 1 = 0$$

$$x^2 + 6x + 9 - 5x - 20 - 1 = 0$$

$$x^2 + x - 12 = 0$$

$$(x+4)(x-3) = 0$$

$$\therefore \underline{x = -4, 3}$$

$$(7) x^2 - 6x - 7 = x^2 - 6x + 9 - 9 - 7$$

$$= \underline{(x-3)^2 - 16}$$

$$\boxed{2} (1) 2020 = \underline{2^2 \times 5 \times 101}$$

$$(2) 3.3 \left(1 - \frac{x}{60}\right) + 4.2 \times \frac{x}{60} = 3.6$$

$$0.9 \times \frac{x}{60} = 0.3$$

$$\therefore \underline{x = 20}$$

$$(3) \frac{5}{100}x + \frac{10}{100}(120 - x) = 120 \times \frac{7}{100}$$

$$5x + 120 \times 10 - 10x = 120 \times 7$$

$$\therefore \underline{x = 72}$$

$$(4) -2 = (1+3)a$$

$$\therefore \underline{a = -\frac{1}{2}}$$

R O 2 産 技 ③

$$\textcircled{3} (1) \quad y = \frac{8}{x}$$

$$A(-2, -4)$$

$$P(4, 2)$$

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

$$(2) \quad P(8, 1) \rightarrow 1 = 8 + k \quad \therefore k = -7$$

$$A(-2, -4) \rightarrow -4 = -2 + k \quad \therefore k = -2$$

$$B(-2, 0) \rightarrow 0 = -2 + k \quad \therefore k = 2$$

$$A B \text{ 上 } \quad -2 \leq k \leq 2$$

$$A P \text{ 上 } \quad -7 \leq k \leq -2$$

$$B P \text{ 上 } \quad -7 \leq k \leq 2$$

$$\therefore \underline{-7 \leq k \leq 2}$$

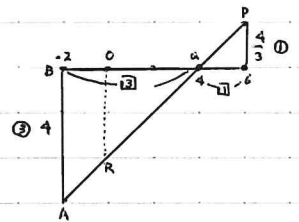
$$(3) \quad P(6, \frac{4}{3})$$

$$P Q : Q A = \frac{4}{3} : 4 = 1 : 3$$

$$\{6 - (-2)\} \times \frac{1}{1+3} = 2$$

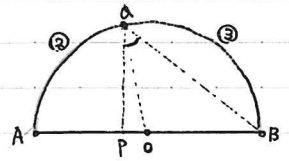
$$6 - 2 = 4$$

$$S_1 : S_2 = \frac{6^2}{a_B} : \frac{4^2}{a_O} = \underline{9 : 4}$$

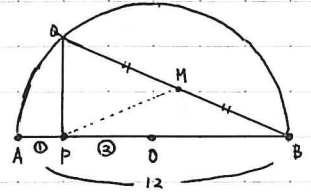


R O 2 産 技 ④

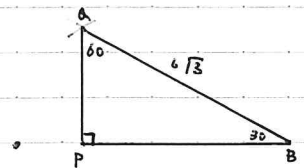
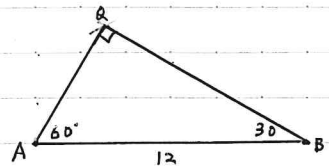
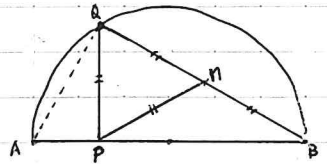
$$\begin{aligned} \text{④ (1)} \quad \angle A O Q &= 180^\circ \times \frac{2}{5} = 72^\circ \\ \angle A B Q &= 72^\circ \times \frac{1}{2} = 36^\circ \\ \angle P Q B &= 90^\circ - 36^\circ = \underline{54^\circ} \end{aligned}$$



$$\begin{aligned} \text{(2)} \quad A P &= 12 \times \frac{1}{2} \times \frac{1}{3} = 2 \\ O P &= 12 \times \frac{1}{2} \times \frac{2}{3} = 4 \\ O Q &= 12 \times \frac{1}{2} = 6 \\ Q P &= \sqrt{6^2 - 4^2} = 2\sqrt{5} \\ \Delta P Q B &= \frac{1}{2} \times (12 - 2) \times 2\sqrt{5} = 10\sqrt{5} \\ \Delta P Q M &= 10\sqrt{5} \times \frac{1}{2} = \underline{5\sqrt{5}} \end{aligned}$$

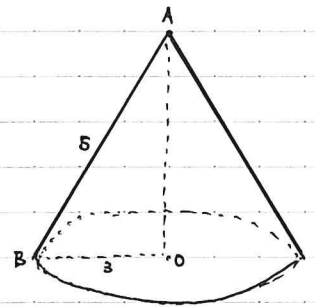


$$\begin{aligned} \text{(3)} \quad Q B &= 12 \times \frac{\sqrt{3}}{2} = 6\sqrt{3} \\ Q P &= 6\sqrt{3} \times \frac{1}{2} = 3\sqrt{3} \\ P M &= \underline{3\sqrt{3}} \end{aligned}$$



R O 2 産 技 ⑤

⑤ (1) $3^2 \pi \times \sqrt{5^2 - 3^2} \times \frac{1}{3} = 12\pi$



(2) $AP = PB$ (\because 相似)
 $AP = PB = 5 \times \frac{1}{2} = \frac{5}{2}$
 $AQ = AB = 5$
 $BQ = \sqrt{3^2 + 3^2} = 3\sqrt{2}$

Q が Δ AB に $AH \perp AB$ と な る 点 と お 3 す

$PH = x$, $AH = y$ と お く

$$\begin{cases} PA^2 = x^2 + y^2 \\ 5^2 = (\frac{5}{2} + x)^2 + y^2 \\ (3\sqrt{2})^2 = (\frac{5}{2} - x)^2 + y^2 \end{cases}$$

$$25 = \frac{25}{4} + 5x + x^2 + y^2$$

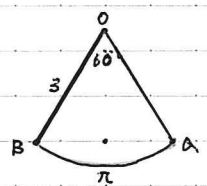
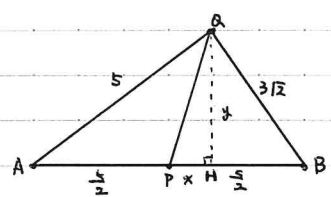
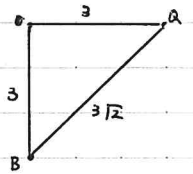
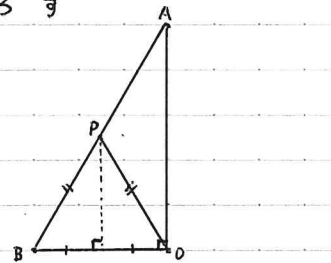
$$18 = \frac{25}{4} - 5x + x^2 + y^2$$

$$7 = 10x$$

$$\therefore x = \frac{7}{10}$$

$$\begin{aligned} PA^2 &= x^2 + y^2 \\ &= 25 - \frac{25}{4} - 5x \\ &= 25 - \frac{25}{4} - 5 \times \frac{7}{10} \\ &= \frac{61}{4} \end{aligned}$$

$$\therefore PA = \frac{\sqrt{61}}{2}$$



(3) $\widehat{BQ} = 3 \times 2\pi \times \frac{60}{360} = \pi$
 $\widehat{BB} = 3 \times 2\pi = 6\pi$
 $5 \times 3 \times \pi \times \frac{\pi}{6\pi} = \frac{5}{2}\pi$
(側面積) (割合)

$$25 = \frac{25}{4} + 5x + x^2 + y^2$$

$$18 = \frac{25}{4} - 5x + x^2 + y^2$$

$$43 = \frac{25}{2} + 2(x^2 + y^2)$$

< 差より和の方が速い >

