$\boxed{1}$ H30

(1) $5 - \frac{1}{\cancel{3}} \times (-\overset{3}{\cancel{9}})$

$= 5 + 3 = 8$〃

(2) $8(a+b) - (4a-b)$

$= 8a + 8b - 4a + b$

$= 4a + 9b$〃

$(x+a)(x-a)$
$= x^2 - a^2$

(3) $(\sqrt{7}+2\sqrt{3})(\sqrt{7}-2\sqrt{3})$

$= 7 - 12 = -5$〃

(4) $4x - 5 = x - 6$

$3x = -1$

$x = -\frac{1}{3}$〃

(5) $\begin{cases} 7x - y = 8 \\ -9x + 4y = 6 \end{cases}$

$\begin{cases} 28x - 4y = 32 \\ -9x + 4y = 6 \end{cases}$

$19x = 38$

$x = 2$〃

$7 \cdot 2 - y = 8$

$14 - y = 8$

$6 = y$〃

(6) $x^2 + 12x + 35 = 0$

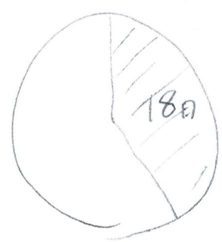
7・5

$(x+7)(x+5) = 0$

$x = -5, -7$〃

(7) 18℃以上→ 18日

40日

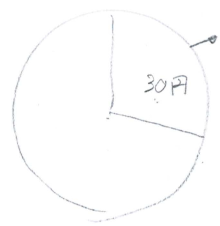


$18 \div 40 = 0.45$

45%〃

$$\begin{array}{r} 0.45 \\ 40\overline{)180} \\ 160 \\ 200 \\ 200 \\ 0 \end{array}$$

100円

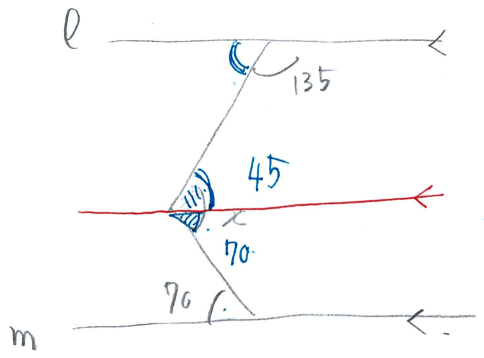


30% = 0.30

$30 \div 100$

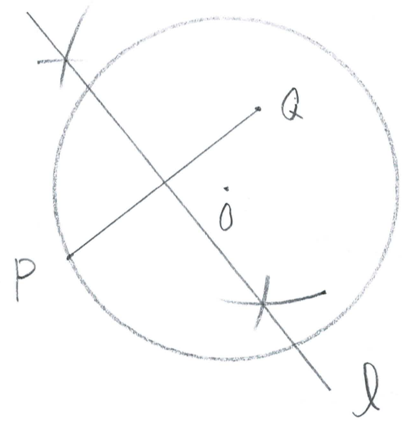
(8)

$180-135=45$



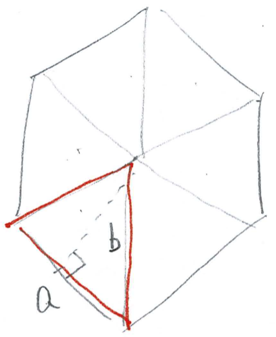
$\Rightarrow 45+70=\underline{115}$

(9)

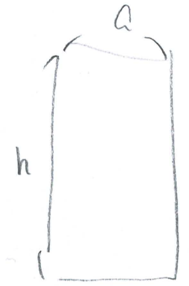


$\boxed{2}$ H30

(1) $P = 6a(\underline{\qquad})$



$\times 2$,



$\times 6$

$P = 6a\underline{b} + 6a\underline{h}$

$= \underline{\underline{6a(b+h)}}$ (イ).

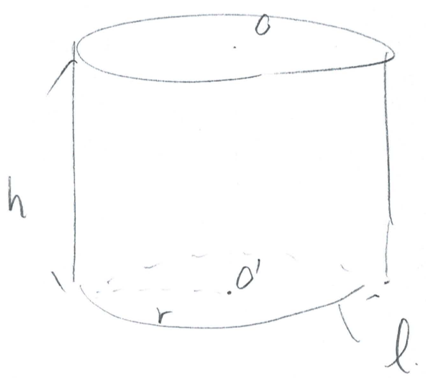
$a \times b \times \frac{1}{\cancel{2}} \times 6 \times \cancel{2}$

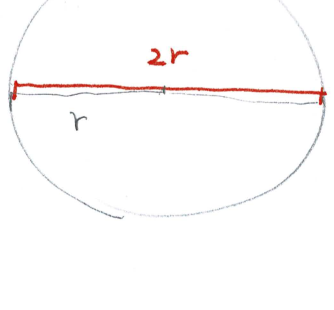
$= 6ab$

$a \times h \times 6$

$= 6ah$

(2)

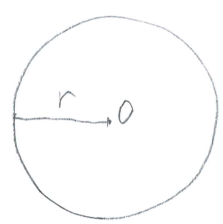




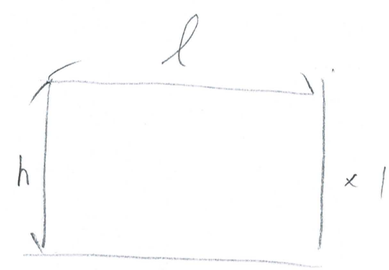
lは円O'の円周なので

$l = 2\pi r$

立体の表面積は



$\times 2$



$\times 1$

$r^2\pi \times 2$

hl

$2 \times \pi \times r \times r$

$Q = \boxed{2\pi r^2} + hl$

ここで $l = 2\pi r$ なので

$= lr + hl$

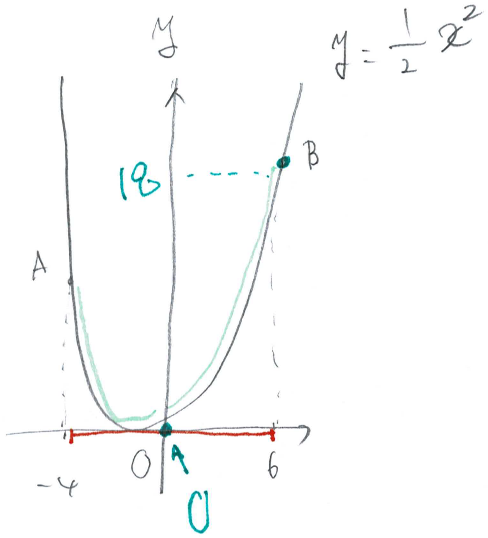
$= l(r+h)$

よって $Q = l(r+h)$

といえる

3

H30



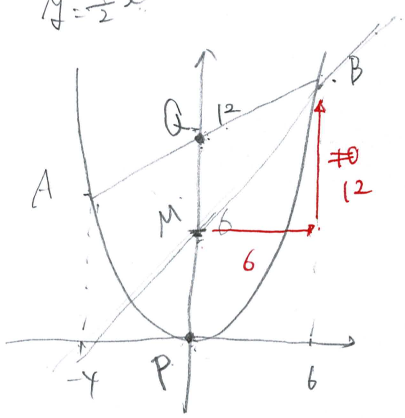
(1) $P(a, b)$

$-4 \leqq a \leqq 6$.

$0 \leqq b \leqq 18$ ..(ウ).

(2)

① $y = \frac{1}{2}x^2$



Qの座標 = 直線ABの切片 → $(0, 12)$

↓

Mの座標 → $(0, 6)$.

↓

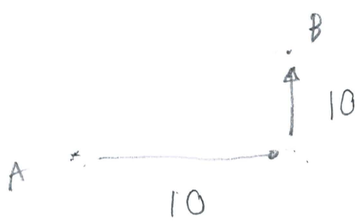
BMの式: $y = ax + 6$

$M(0, 6)$ $B(6, \cancel{16}\ 18)$

傾き $= \frac{\cancel{10}\ 12}{6} = \cancel{\frac{5}{3}}\ 2$

$y = \cancel{\frac{5}{3}}\ 2x + 6$ ..(ア)

A$(-4, 8)$ B$(6, 18)$.



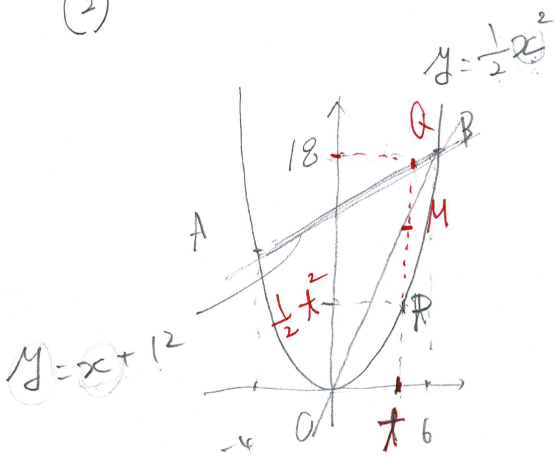
傾き = $\frac{yの進んだ分}{xの進んだ分}$

$= \frac{10}{10} = 1$ → $y = x + b$

$8 = -4 + b$

$b = 12$

(2)

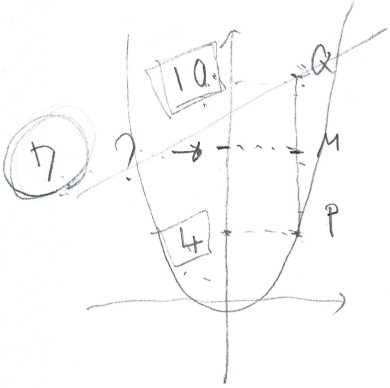


$\boxed{\text{Pの座標を求める} \Downarrow \text{Pの}x\text{座標を}t\text{とする}}$

1. BOの式を求める　$y=3x$.

2. Pのxをtとした時の

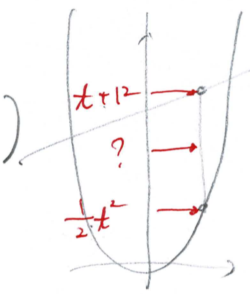
点Q.と点Mを求める.



$P\left(t, \frac{1}{2}t^2\right)$.　　AB: $y=x+12$.

$Q\left(t, t+12\right)$

$M\left(t, \left(\frac{1}{2}t^2+t+12\right)\times\frac{1}{2}\right)$



10 8 8 7 8 8 ×

$\left(\frac{1}{2}t^2+t+12\right)\times\cancel{\frac{1}{2}} = 3\times t$　$\times 2$

$\frac{1}{2}t^2+t+12 = 6t$

$\frac{1}{2}t^2-5t+12 = 0$

$t^2-10t+24 = 0$

$(t-4)(t-6) = 0$

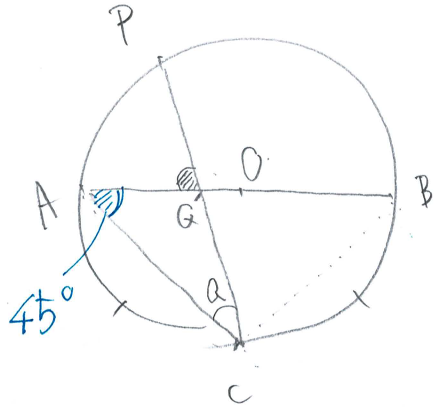
$t = 4.\ \cancel{6}$

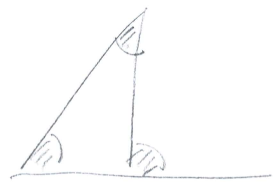
P(4, 8)

//

$\boxed{4}$

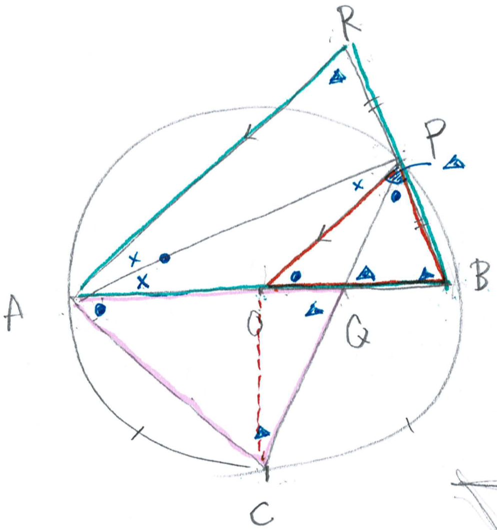
(1)





$\angle AQP = 45 + a$　エ

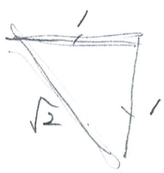
(2)

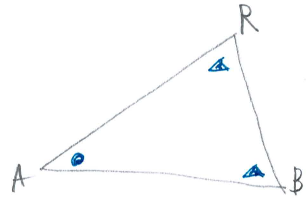


① $\boxed{\triangle ABP \equiv \triangle ARP}$

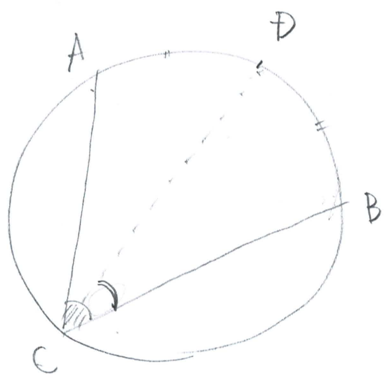
② $\triangle ACQ = \square AOPR \times \boxed{\frac{2}{3}}$

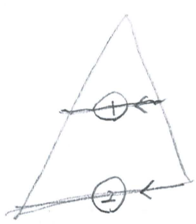
2　3





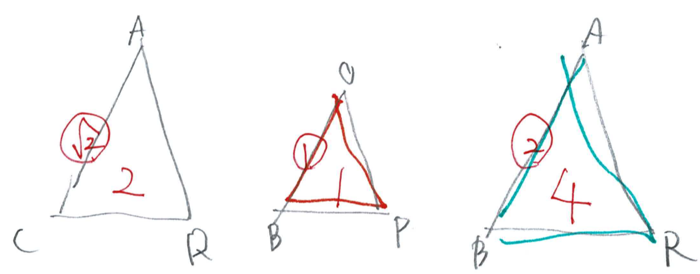
◎ + ▲ + ▲ = 180°





△

$\triangle ACQ$　$\triangle OBP$　$\triangle ABR$



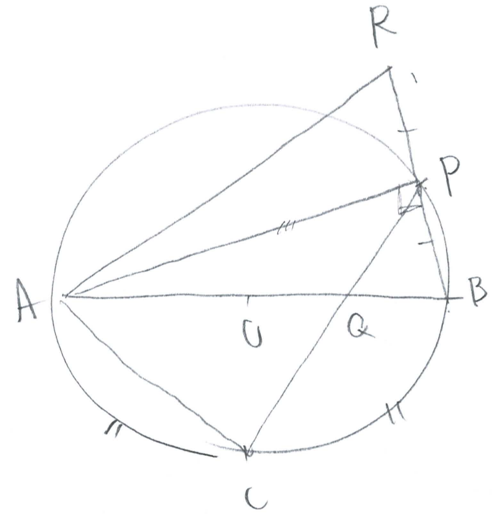
$\triangle ACQ : \square AOPR = 2 : 3$

$\triangle ACQ \times 3 = \square AOPR \times 2$

$\triangle ACQ = \frac{2}{3} \times \square AOPR$

(2)

①



$\triangle ABP$ と $\triangle ARP$ において

仮定より

$PB = PR$ …①

共通な辺なので

$AP = AP$ …②

$\overset{\frown}{AB}$

（ $\angle APB$ は半円に対する円周角なので

$\angle APB = 90^\circ$ ）

よって

よっ

［また点 R は BP を延長した点なので］

$\angle APB = \angle APR = 90^\circ$ …③

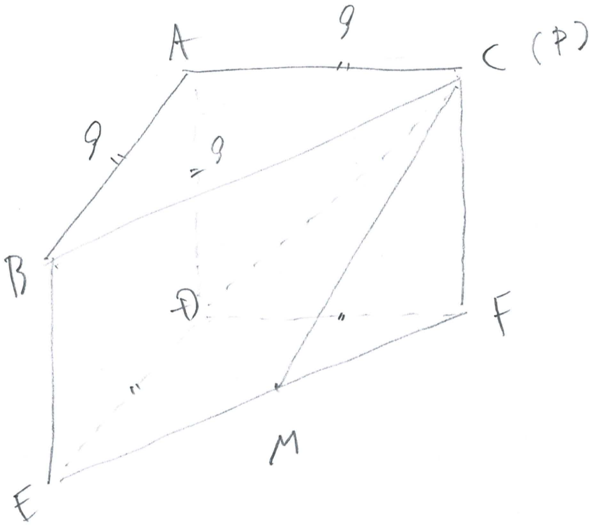
故に①.②.③より

2組の辺とその間の角がそれぞれ等しいので

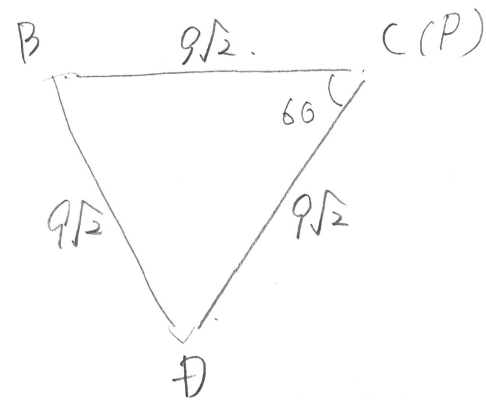
$\triangle ABP \equiv \triangle ARP$ //

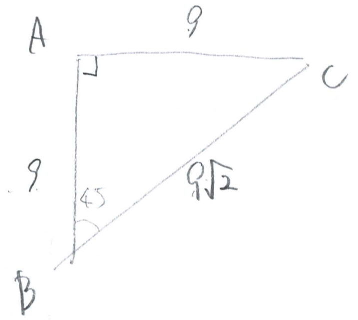
5

H30



(1)

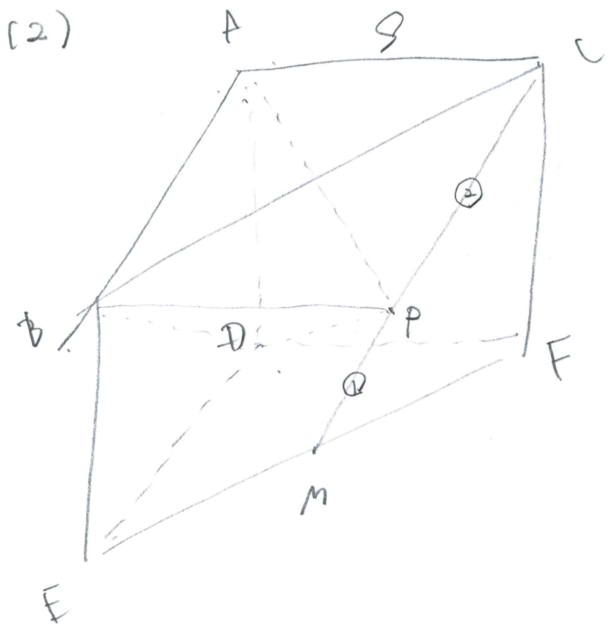




$\underline{60°}$

$\boxed{P-ABD = ?}$

(2)

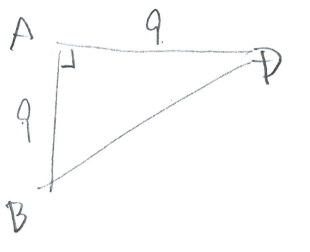


C-ABD → P-ABD

① C-ABDの体積

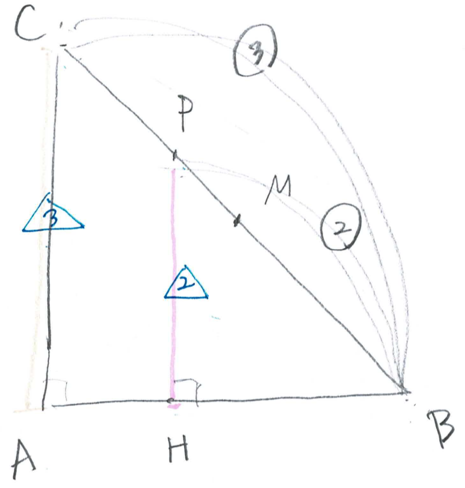
② 高さのちがい

C-ABD = 底面 × 高さ × $\frac{1}{3}$



ABD　AC

$9 \times 9 \times \frac{1}{2} \times 9 \times \frac{1}{3} = \frac{9 \times 9 \times 3}{2}$



C-ABD → 高さ AC

P-ABD → 高さ PH

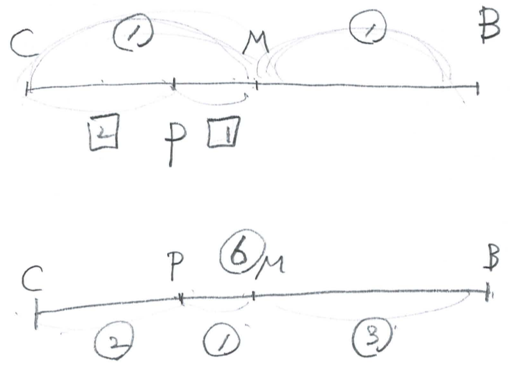
PHはACの何倍?

$PH = AC \times \boxed{\frac{2}{3}}$

ex) $PH = AC \times \frac{1}{2}$

$PH = AC \times \frac{2}{3}$

⇩



BP : BC が知りたい

= 4 : 6

= 2 : 3

C-ABDの高さを $\frac{2}{3}$ 倍すると P-ABD.

⇩

$$P\text{-}ABD = C\text{-}ABD \times \frac{2}{3}$$

$$= \frac{9 \times 9 \times \cancel{3}}{\cancel{2}} \times \frac{\cancel{2}}{\cancel{3}} = 81$$