

11

$$(1) 5 + \frac{1}{2} \times (-8) = 5 - 4 = 1$$

$$(2) 4(a-b) - (a-9b) = 4a - 4b - a + 9b = 3a + 5b$$

$$(3) (\sqrt{b}-1)^2 = b - 2\sqrt{b} + 1 = 8 - 2\sqrt{b}$$

$(a+b)^2 = a^2 + 2ab + b^2$

$$(4) 4x + 6 = 5(x+3) \Rightarrow 4x + 6 = 5x + 15 \Rightarrow -9 = x$$

$$(5) \begin{cases} -x + 2y = 8 \\ 3x - y = 6 \end{cases} \Rightarrow \begin{cases} -x + 2y = 8 \\ -4 + 2y = 8 \end{cases} \Rightarrow \begin{cases} 2y = 12 \\ y = 6 \end{cases}$$

$$\begin{array}{r} 5x = 20 \\ x = 4 \end{array}$$

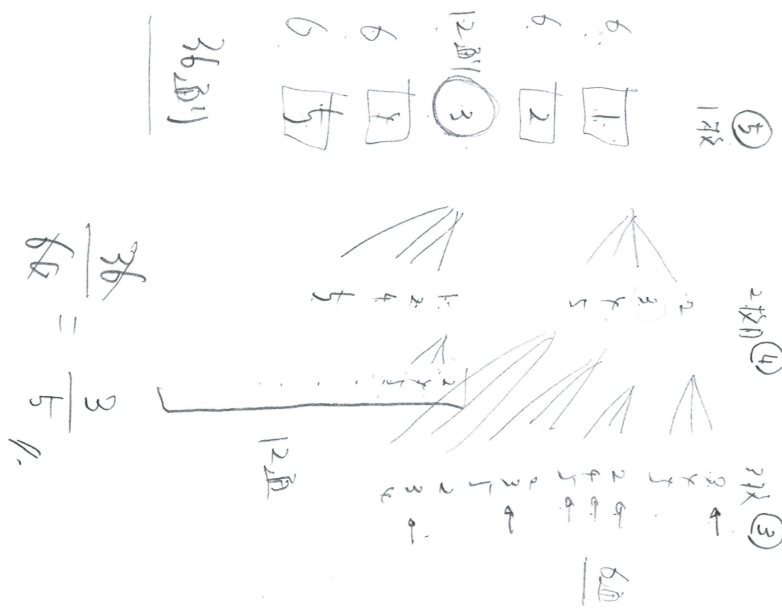
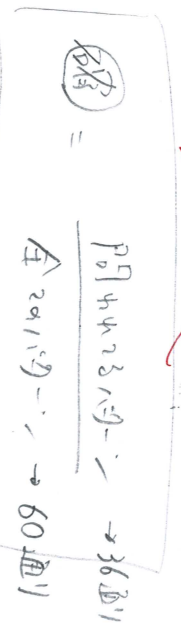
R1

$$(6) x^2 + x - 9 = 0 \Rightarrow x = \frac{-1 \pm \sqrt{1 - 4(-9)}}{2}$$

$$= \frac{-1 \pm \sqrt{1+36}}{2} = \frac{-1 \pm \sqrt{37}}{2}$$

$$(7) 1 \cdot 2 \cdot 3 = 6$$

ポイント



17)

1.5.15.25.35.45.55.65.75.85.95.105.115.125.135.145.155.165.175.185.195.205.215.225.235.245.255.265.275.285.295.305.315.325.335.345.355.365.375.385.395.405.415.425.435.445.455.465.475.485.495.505.515.525.535.545.555.565.575.585.595.605.615.625.635.645.655.665.675.685.695.705.715.725.735.745.755.765.775.785.795.805.815.825.835.845.855.865.875.885.895.905.915.925.935.945.955.965.975.985.995.1005.1015.1025.1035.1045.1055.1065.1075.1085.1095.1105.1115.1125.1135.1145.1155.1165.1175.1185.1195.1205.1215.1225.1235.1245.1255.1265.1275.1285.1295.1305.1315.1325.1335.1345.1355.1365.1375.1385.1395.1405.1415.1425.1435.1445.1455.1465.1475.1485.1495.1505.1515.1525.1535.1545.1555.1565.1575.1585.1595.1605.1615.1625.1635.1645.1655.1665.1675.1685.1695.1705.1715.1725.1735.1745.1755.1765.1775.1785.1795.1805.1815.1825.1835.1845.1855.1865.1875.1885.1895.1905.1915.1925.1935.1945.1955.1965.1975.1985.1995.2005.2015.2025.2035.2045.2055.2065.2075.2085.2095.2105.2115.2125.2135.2145.2155.2165.2175.2185.2195.2205.2215.2225.2235.2245.2255.2265.2275.2285.2295.2305.2315.2325.2335.2345.2355.2365.2375.2385.2395.2405.2415.2425.2435.2445.2455.2465.2475.2485.2495.2505.2515.2525.2535.2545.2555.2565.2575.2585.2595.2605.2615.2625.2635.2645.2655.2665.2675.2685.2695.2705.2715.2725.2735.2745.2755.2765.2775.2785.2795.2805.2815.2825.2835.2845.2855.2865.2875.2885.2895.2905.2915.2925.2935.2945.2955.2965.2975.2985.2995.3005.3015.3025.3035.3045.3055.3065.3075.3085.3095.3105.3115.3125.3135.3145.3155.3165.3175.3185.3195.3205.3215.3225.3235.3245.3255.3265.3275.3285.3295.3305.3315.3325.3335.3345.3355.3365.3375.3385.3395.3405.3415.3425.3435.3445.3455.3465.3475.3485.3495.3505.3515.3525.3535.3545.3555.3565.3575.3585.3595.3605.3615.3625.3635.3645.3655.3665.3675.3685.3695.3705.3715.3725.3735.3745.3755.3765.3775.3785.3795.3805.3815.3825.3835.3845.3855.3865.3875.3885.3895.3905.3915.3925.3935.3945.3955.3965.3975.3985.3995.4005.4015.4025.4035.4045.4055.4065.4075.4085.4095.4105.4115.4125.4135.4145.4155.4165.4175.4185.4195.4205.4215.4225.4235.4245.4255.4265.4275.4285.4295.4305.4315.4325.4335.4345.4355.4365.4375.4385.4395.4405.4415.4425.4435.4445.4455.4465.4475.4485.4495.4505.4515.4525.4535.4545.4555.4565.4575.4585.4595.4605.4615.4625.4635.4645.4655.4665.4675.4685.4695.4705.4715.4725.4735.4745.4755.4765.4775.4785.4795.4805.4815.4825.4835.4845.4855.4865.4875.4885.4895.4905.4915.4925.4935.4945.4955.4965.4975.4985.4995.5005.5015.5025.5035.5045.5055.5065.5075.5085.5095.5105.5115.5125.5135.5145.5155.5165.5175.5185.5195.5205.5215.5225.5235.5245.5255.5265.5275.5285.5295.5305.5315.5325.5335.5345.5355.5365.5375.5385.5395.5405.5415.5425.5435.5445.5455.5465.5475.5485.5495.5505.5515.5525.5535.5545.5555.5565.5575.5585.5595.5605.5615.5625.5635.5645.5655.5665.5675.5685.5695.5705.5715.5725.5735.5745.5755.5765.5775.5785.5795.5805.5815.5825.5835.5845.5855.5865.5875.5885.5895.5905.5915.5925.5935.5945.5955.5965.5975.5985.5995.6005.6015.6025.6035.6045.6055.6065.6075.6085.6095.6105.6115.6125.6135.6145.6155.6165.6175.6185.6195.6205.6215.6225.6235.6245.6255.6265.6275.6285.6295.6305.6315.6325.6335.6345.6355.6365.6375.6385.6395.6405.6415.6425.6435.6445.6455.6465.6475.6485.6495.6505.6515.6525.6535.6545.6555.6565.6575.6585.6595.6605.6615.6625.6635.6645.6655.6665.6675.6685.6695.6705.6715.6725.6735.6745.6755.6765.6775.6785.6795.6805.6815.6825.6835.6845.6855.6865.6875.6885.6895.6905.6915.6925.6935.6945.6955.6965.6975.6985.6995.7005.7015.7025.7035.7045.7055.7065.7075.7085.7095.7105.7115.7125.7135.7145.7155.7165.7175.7185.7195.7205.7215.7225.7235.7245.7255.7265.7275.7285.7295.7305.7315.7325.7335.7345.7355.7365.7375.7385.7395.7405.7415.7425.7435.7445.7455.7465.7475.7485.7495.7505.7515.7525.7535.7545.7555.7565.7575.7585.7595.7605.7615.7625.7635.7645.7655.7665.7675.7685.7695.7705.7715.7725.7735.7745.7755.7765.7775.7785.7795.7805.7815.7825.7835.7845.7855.7865.7875.7885.7895.7905.7915.7925.7935.7945.7955.7965.7975.7985.7995.8005.8015.8025.8035.8045.8055.8065.8075.8085.8095.8105.8115.8125.8135.8145.8155.8165.8175.8185.8195.8205.8215.8225.8235.8245.8255.8265.8275.8285.8295.8305.8315.8325.8335.8345.8355.8365.8375.8385.8395.8405.8415.8425.8435.8445.8455.8465.8475.8485.8495.8505.8515.8525.8535.8545.8555.8565.8575.8585.8595.8605.8615.8625.8635.8645.8655.8665.8675.8685.8695.8705.8715.8725.8735.8745.8755.8765.8775.8785.8795.8805.8815.8825.8835.8845.8855.8865.8875.8885.8895.8905.8915.8925.8935.8945.8955.8965.8975.8985.8995.9005.9015.9025.9035.9045.9055.9065.9075.9085.9095.9105.9115.9125.9135.9145.9155.9165.9175.9185.9195.9205.9215.9225.9235.9245.9255.9265.9275.9285.9295.9305.9315.9325.9335.9345.9355.9365.9375.9385.9395.9405.9415.9425.9435.9445.9455.9465.9475.9485.9495.9505.9515.9525.9535.9545.9555.9565.9575.9585.9595.9605.9615.9625.9635.9645.9655.9665.9675.9685.9695.9705.9715.9725.9735.9745.9755.9765.9775.9785.9795.9805.9815.9825.9835.9845.9855.9865.9875.9885.9895.9905.9915.9925.9935.9945.9955.9965.9975.9985.9995.1000

308

$$P_{01} + P_{12} + P_{23} + P_{34} + P_{45} = 6$$

1枚

2枚

3枚

- 1.2.3 → 6
- 1.2.4 → 8
- 1.2.5 → 10

1枚

2 <

3 <

3 4 5

4 5

$$\frac{6}{10} = \frac{3}{5}$$

5

X

$${}^4A_2 \rightarrow {}^4C_3 = \frac{5 \cdot 4 \cdot 3}{3 \cdot 2 \cdot 1} = 10$$

2

3 <

4 5

$$P_{01} \rightarrow {}^4C_2 = \frac{4 \cdot 3}{2} = 6$$

4

5

X

(3.0.0)

3

4 -

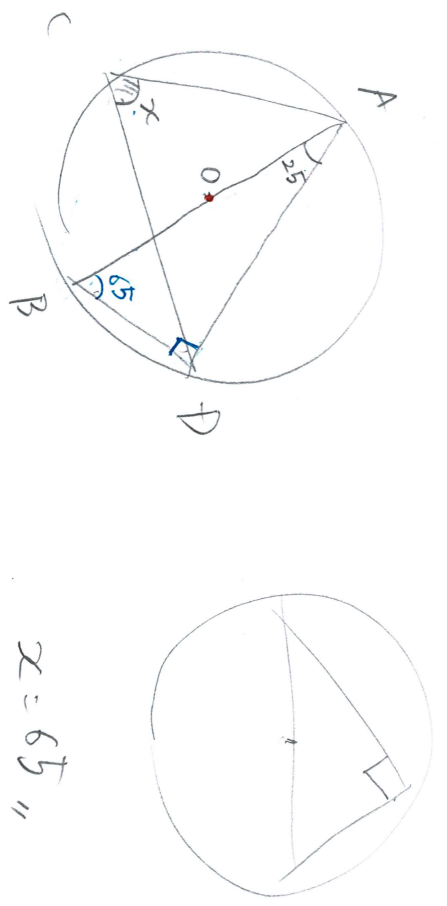
5 -

1.2.4.5

5

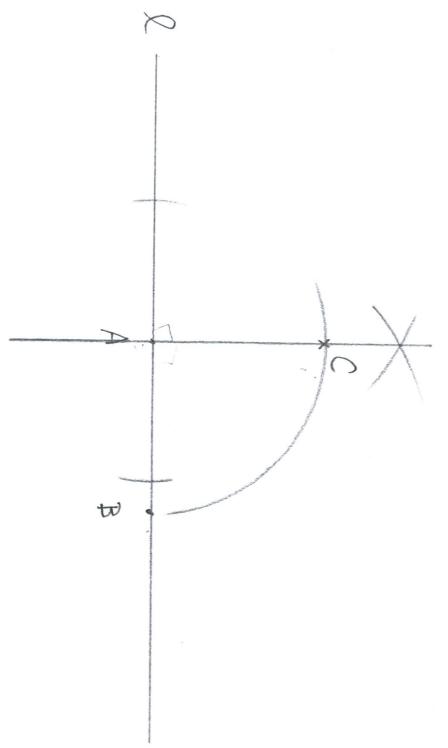
X

(8)



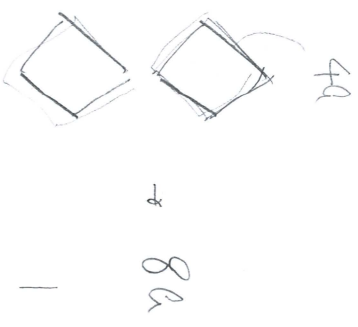
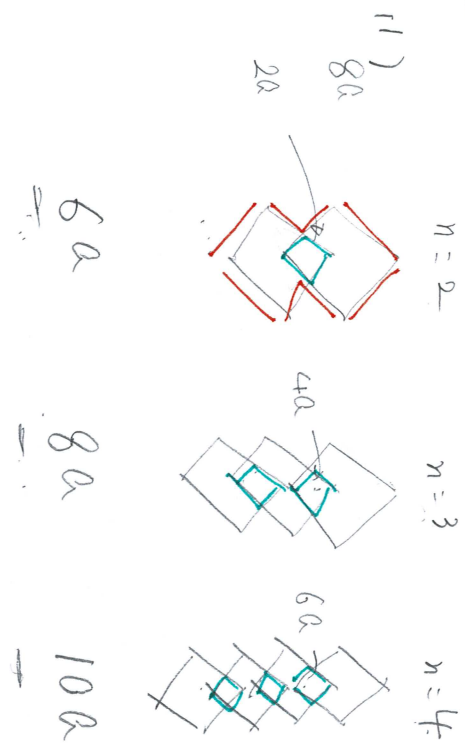
$x = 65^\circ$

(9)



2

R1



$$\begin{aligned}
 & (n \times 2 + 2)Q \\
 & = (2n + 2)Q \\
 & = \underline{2Q(n+1)} \cdot (I)
 \end{aligned}$$

$$\frac{6Q}{\quad}$$

$n=3$

$$\begin{aligned}
 & 4Q \times 3 - 2Q \times 2 \\
 & = 12Q - 4Q = 8Q
 \end{aligned}$$

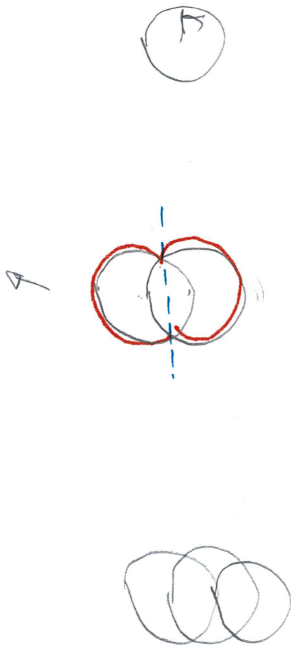
$n=4$

$$\begin{aligned}
 & 4Q \times 4 - 2Q \times 3 \\
 & = 16Q - 6Q = 10Q
 \end{aligned}$$

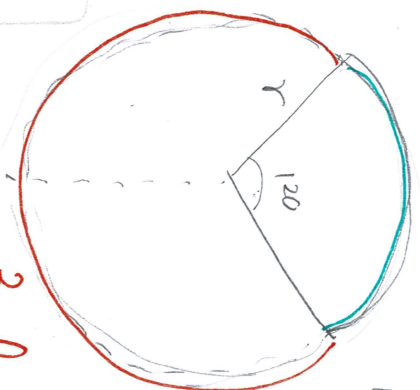
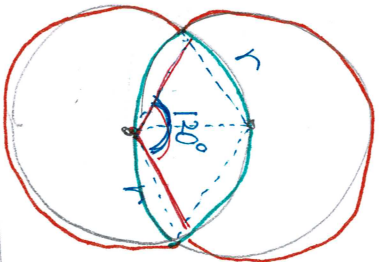
$$\begin{aligned}
 & 4Q \times n - 2Q \times (n-1) \\
 & = 4Qn - 2Qn + 2Q \\
 & = 2Qn + 2Q \\
 & = \underline{2Q(n+1)}
 \end{aligned}$$

2
(2)

$n=2$



R1



$\frac{1}{3}R$

$\frac{2}{3}R$

直径 $\times 2 \times \frac{R}{360}$

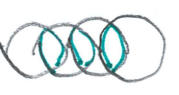
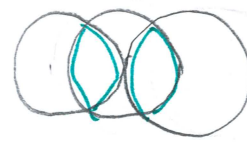
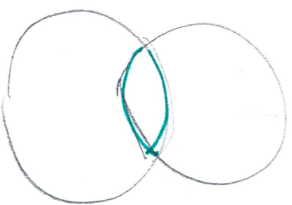
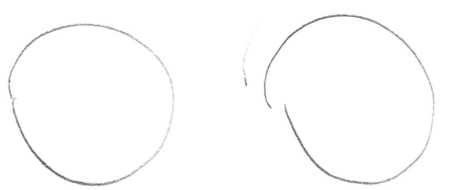
$$\frac{120}{360} = \frac{1}{3}$$

$$\begin{aligned} n \times R - \frac{1}{3}R \times (2n-2) \\ = nR - \frac{2}{3}nR + \frac{2}{3}R \\ = \frac{1}{3}nR + \frac{2}{3}R = \frac{1}{3}R(n+2) \end{aligned}$$

$n=2$

$n=3$

$n=4$



$\frac{4}{3}R$ (6)

2R

$-\frac{1}{3}R \times 2$

3R

$-\frac{1}{3}R$ (4)

n 個目 α 形 α 同 1 長 2 口

$$M = n \times l - \frac{1}{3} l (2n - 2) \quad \text{“ 荒土 307 ”}$$

$$= n l - \frac{2}{3} n l + \frac{2}{3} l$$

$$= \frac{1}{3} n l + \frac{2}{3} l$$

$$= \frac{1}{3} l (n + 2) \quad \text{“ ”}$$

$n = 2$ α 形 $\hat{1}$

$$M = 2 l - \frac{1}{3} l \times 2$$

$n = 3$ α 形 $\hat{1}$

$$M = 3 l - \frac{1}{3} l \times 4 \quad \text{“ ”}$$

n 個目 α

3

11) $y = -x + 9$ $P(-4, ?)$



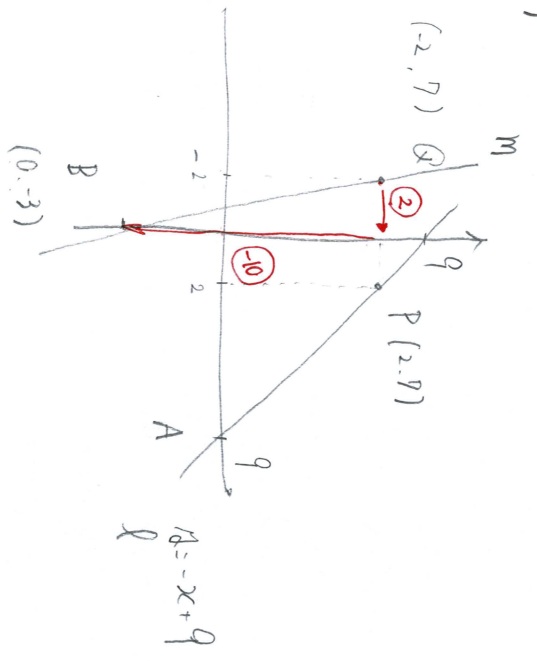
$$= -(-4) + 9$$

$$= 4 + 9$$

$$= 13$$

F31
R1

12)



$B(0, -3)$ $Q(-2, 7)$

$$y = ax + b$$

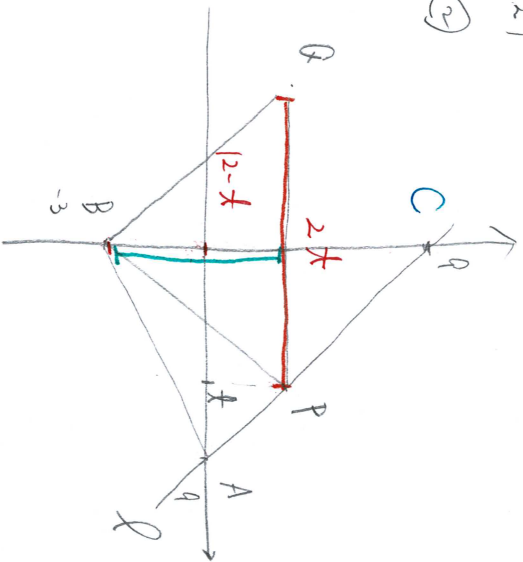
傾斜 切片

$$y = -5x - 3.17$$

$$\text{傾斜} = \frac{\text{yの差}}{\text{xの差}} = \frac{-10}{2} = -5$$

(2)

(2)



$$\Delta BPA = \Delta BAP \times 2$$

点Pの座標を求めよ



点Pの座標は $t=9$

$\Delta BPA = \Delta BAP$ を求める。

$$3 + (-t + 9)$$

$$= 12 - t$$

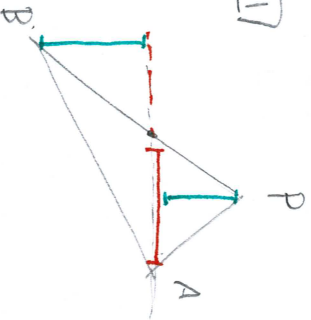
$$\Delta BPA = 2t \times (12 - t) \times \frac{1}{2}$$

点Pの座標は

$$y = -x + 9$$

$$= -t + 9$$

(1)



$$P(t, -t + 9)$$

$$\Delta BPA = \Delta BAP \times 2$$

$$t \times (12 - t) \times \frac{1}{2} = (54 - 6t) \times 2$$

$$12t - t^2 = 108 - 12t$$

$$t^2 - 24t + 108 = 0$$

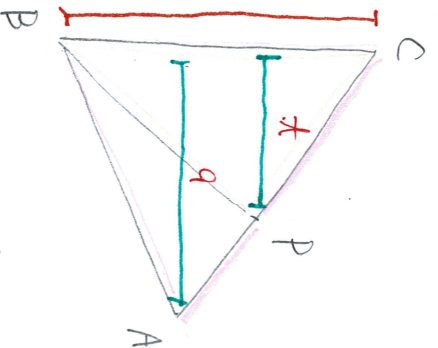
$$(t - 27)(t + 4) = 0$$

$$t = 27, -4$$

$$(t - 18)(t - 6) = 0$$

$$t = 18, 6$$

(2)



$$\Delta BAP = \Delta ABC - \Delta BCP$$

$$= 12 \times 9 \times \frac{1}{2} - 12 \times t \times \frac{1}{2}$$

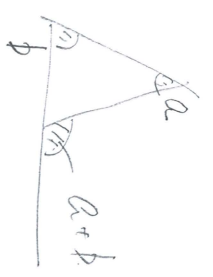
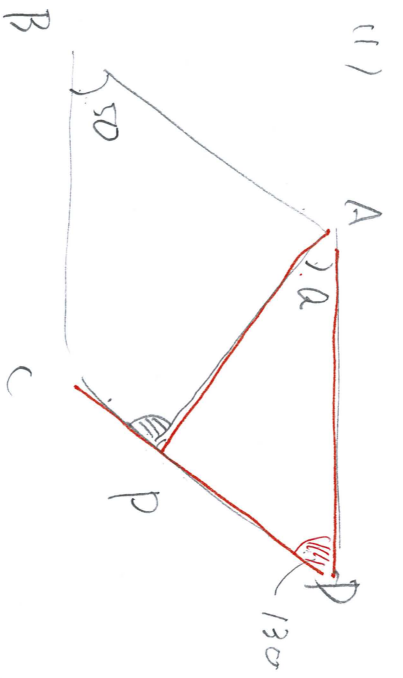
$$= 54 - 6t$$

$$\begin{array}{r} 108 \times 1 \\ 2 \times 2 \\ 54 \times 2 \\ 27 \times 4 \\ 9 \times 12 \\ 3 \times 36 \end{array}$$

$$\begin{array}{r} 108 \\ 34 \\ 27 \\ 9 \\ 3 \end{array}$$

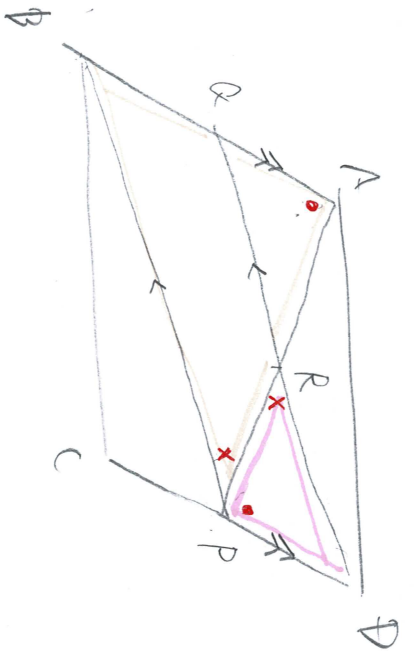
4

R1 (H31)



$\angle APC = a + 130 \dots (P)$

(2)



$\triangle ABP \sim \triangle PDR$

$\triangle ABP \sim \triangle PDR$ 相似

平行四邊形 ABCD 的 $AB \parallel CD$ 的

$\angle BAP = \angle DPR$ (錯角) ... ①

任意の $QD \parallel BP$ 的

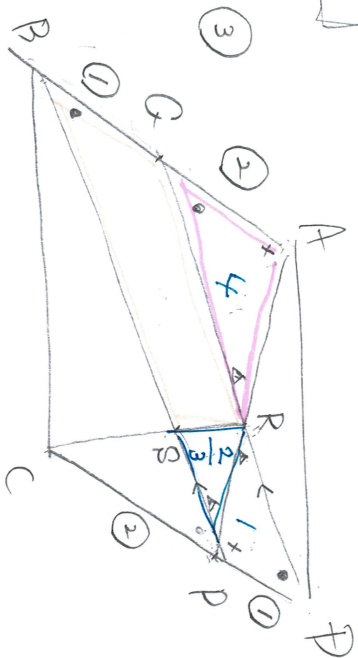
$\angle APB = \angle PRD$ (錯角) ... ②

① ② 的

2 組の角が等しいから

$\triangle ABP \sim \triangle PDR$

(2)



$$\square QBSR = \triangle AQR \times \left[\frac{13}{12} \right]$$

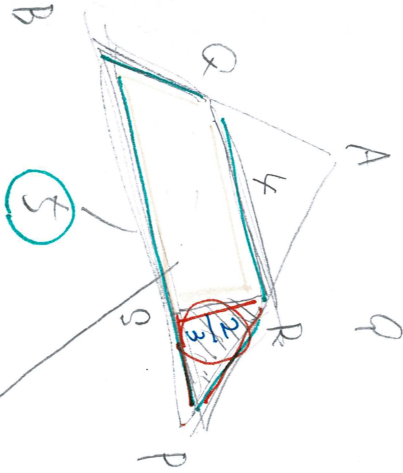
$$\frac{13}{3} \div 4$$

$\triangle ABP \sim \triangle PDR$

$$= \frac{13}{3} \times \frac{1}{4}$$

$$\begin{aligned} & \text{相似} \quad 3 : 1 \\ & \text{相似} \quad 9 : 1 \\ & = \frac{13}{12} \end{aligned}$$

$$\frac{1}{4}$$



$\triangle AQR \sim \triangle PRD$

$$\begin{aligned} & \text{相似} \quad 2 : 1 \\ & \text{相似} \quad 4 : 1 \end{aligned}$$

比 = 面積

1. 相似 \triangle \triangle

2. 同面積 (相似比)

$$5 - \frac{2}{3} = \frac{13}{3}$$

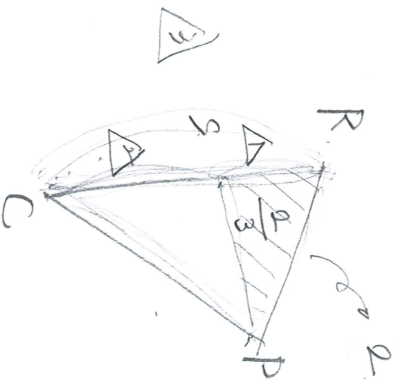
$$\begin{aligned} & \text{相似} \quad 3 \rightarrow 2 \\ & \times \frac{1}{3} \quad 1 \rightarrow ? \end{aligned}$$

$$? = \frac{2}{3}$$

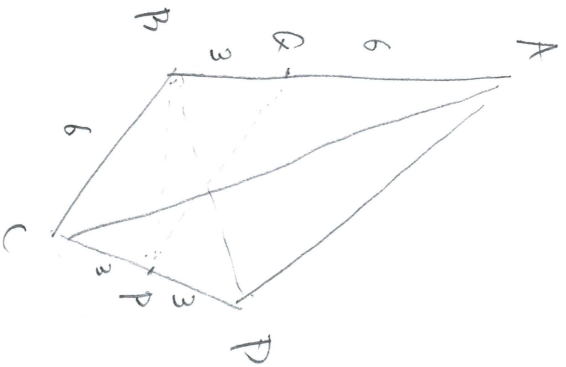
$$\square QBSR = \frac{13}{3} = \triangle AQR = 4$$

$$\square QBSR : \triangle AQR = \frac{13}{3} : 4$$

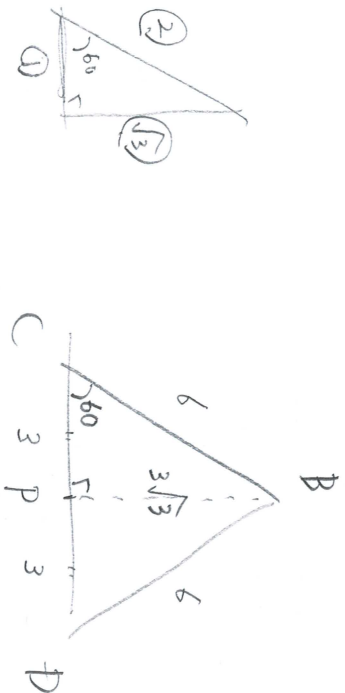
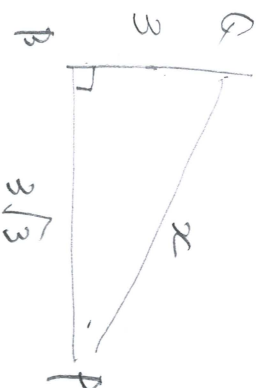
$$1 : 4$$



5



(1) $\boxed{PQ \text{ 長さ}}$

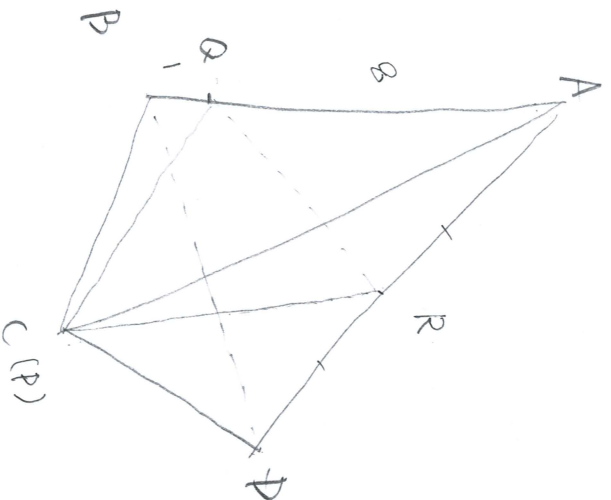


$$x = \sqrt{3^2 + (3\sqrt{3})^2}$$

$$= \sqrt{9 + 27}$$

$$= \sqrt{36} = \underline{6}$$

(2)



$\boxed{R - AQP = ?}$

① 立体 A-BCD の体積

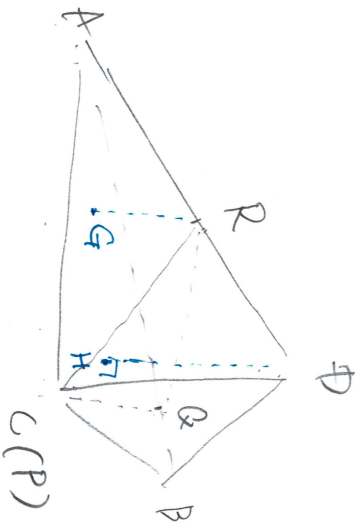
⇔

立体 D-ABC

立体 D-ABC と

$\left. \begin{array}{l} \text{底面は } \frac{3 \cdot 6}{2} \text{ 倍} \\ \text{高さは } \frac{1}{2} \text{ 倍} \end{array} \right\}$

立体 R-AQP



$$\text{底面} \times \text{高} \times \frac{1}{3}$$

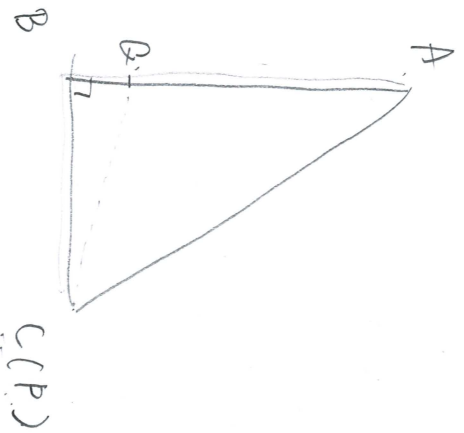
$$\text{立体 } D-ABC = ABC \times DH$$



$$\text{立体 } R-ADP = AQP \times RQ \quad (AQC)$$

$$A-BCD = \Delta BCD \times AB \times \frac{1}{3}$$

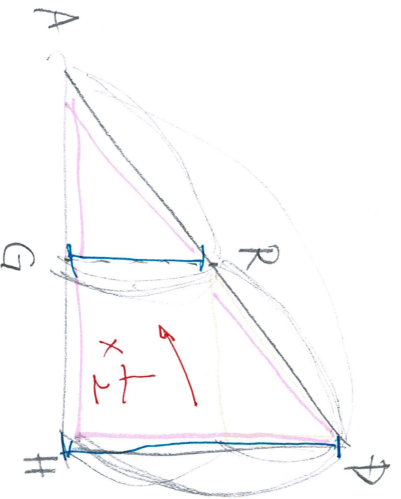
$$\frac{8 \times 3 \sqrt{3} \times \frac{1}{2}}{8} \times 9 \times \frac{1}{3} = 27\sqrt{3}$$



$$\Delta ABC = \frac{9}{2} \times BC \times \frac{1}{2} \times \frac{8}{9}$$

$$AQP = \frac{8}{9} \times BC \times \frac{1}{2}$$

$$\Delta ABC \times \frac{8}{9} = \Delta AQP$$



$$R-AQP = D-ABC \times \frac{8}{9} \times \frac{1}{2}$$

$$= \frac{3}{27\sqrt{3}} \times \frac{48}{9} \times \frac{1}{2}$$

$$= 12\sqrt{3}$$