

(هم) صَرَب

ب. انزين

الف)  $y = 2x^2 - 4x + 1$

ext  $\left| \begin{array}{l} -\frac{b}{2a} = \frac{4}{4} = 1 \\ -\frac{\Delta}{4a} = \frac{-4}{4} = -1 \end{array} \right.$

$\Delta = b^2 - 4ac \Rightarrow 16 - 4 = 12$

ب)  $y = -2x^2 + 4x - 1$

ext  $\left| \begin{array}{l} -\frac{b}{2a} = \frac{-4}{-4} = 1 \\ -\frac{\Delta}{4a} = \frac{16}{-8} = -2 \end{array} \right.$

$\Delta = b^2 - 4ac \Rightarrow 16 - 4(-2)(-1) = 12$

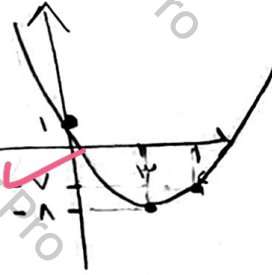
الف)  $y = x^2 - 4x + 1$

ext  $\left| \begin{array}{l} -\frac{b}{2a} = \frac{4}{2} = 2 \\ -\frac{\Delta}{4a} = \frac{-16}{4} = -4 \end{array} \right.$

x	1	2	3	0	1
y	-2	-1	1	-1	-2

$\Delta = b^2 - 4ac \Rightarrow 16 - 4 = 12$

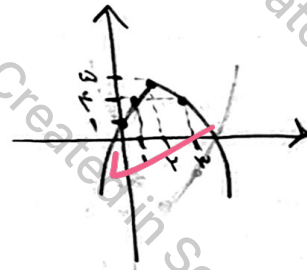
16 - 24 = -8



ب)  $y = -x^2 + 4x - 1$

ext  $\left| \begin{array}{l} -\frac{b}{2a} = \frac{-4}{-2} = 2 \\ -\frac{\Delta}{4a} = \frac{-16}{-4} = 4 \end{array} \right.$

x	1	2	3	0
y	2	3	1	-1



$\Delta = b^2 - 4ac \Rightarrow 16 - 4(-1)(-1) = 12$

$2x^3 + 11x^2 - 9x - 4 = 0 \rightarrow \alpha(x-\alpha)(x-\beta)(x-\gamma)$

$= \alpha x^3 - \alpha(\alpha+\beta+\gamma)x^2 + \alpha(\alpha\beta+\alpha\gamma+\beta\gamma) - \alpha\alpha\beta\gamma = 0$

$S = \frac{\alpha+\beta+\gamma}{-2} = \frac{-11}{2} \rightarrow 1 - \frac{1}{2} = \frac{-11}{2} \rightarrow \alpha = -11$

$P = \frac{\alpha\beta\gamma}{2} = \frac{4}{2} = 2 \rightarrow \alpha\beta = -2 \quad \gamma = -\frac{1}{2}$

$x^2 - 11mx + m = 0 \xrightarrow{x=\alpha} \alpha^2 - 11m\alpha + m = 0$

$\xrightarrow{x=\beta} \beta^2 - 11m\beta + m = 0$

$S = 11$   
 $P = m$

$2x^2 - mx - m = 0$

$2x^2 - x - 1 = 0$

$P = \frac{-1}{2}$

$P = \frac{c}{a}$

$\sqrt{\alpha} - \sqrt{\beta} = 1$   
 $\alpha + \beta - 2\sqrt{\alpha\beta} = 1$   
 $\frac{S}{2} - \frac{P}{2} = 1$

$11 - 2\sqrt{m} = 1 \rightarrow \sqrt{m} = 5 \rightarrow m = 25$

$$y = rx^2 - (m+r)x + m$$

$$y = (0, m) \rightarrow \text{تقاطع با محور } y$$

$$\alpha + \beta = \frac{m+r}{r}$$

$$\alpha\beta = \frac{m}{r}$$

$$\frac{m}{r} = \frac{r}{r} \cdot \frac{-1}{r}$$

$$S = \frac{1}{r} \cdot \frac{|m+r|}{r} \cdot |m| = \frac{|m(m+r)|}{r^2}$$

$$|m(m+r)| = r \rightarrow m^2 - rm - r = 0 \rightarrow (m-r)(m+1) = 0$$

$$|m_1 - m_2| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{(m+r)^2}}{r} = \frac{m+r}{r} \quad m = r \quad m = -1$$

$$\Delta = (m+r)^2 - 4m \rightarrow m^2 + r^2 + 2rm - 4m = m^2 + r^2 - 2m = (m-r)^2$$

$$y = ax^2 + rx + a$$

$$\Delta = r^2 + 4a^2 = 4rw$$

$$a > 0 \text{ min } \Delta = 9 - 4a^2$$

$$a = \frac{r \pm \sqrt{4rw}}{2} \rightarrow \begin{cases} a \leq r \\ a \leq -\frac{r}{2} \end{cases} \rightarrow a \leq r$$

$$\text{ext } \begin{cases} \frac{-b}{2a} = \frac{-r}{2a} = -\frac{1}{2} \\ \frac{-\Delta}{4a} = \frac{r^2 - 4a^2}{4a} \end{cases}$$

$$\frac{r^2 - 4a^2}{4a} = \frac{r}{4a} \rightarrow r(r^2 - 4a^2) = r \rightarrow r^2 - 4a^2 = 1$$

$$\begin{cases} 4a^2 - 1 = 1 \\ 4a^2 - 1 = 1 \\ 4a^2 - 1 = 1 \end{cases}$$

$$x^2 - (a+1)x + a = 0$$

$$x = \alpha \rightarrow \alpha^2 - (a+1)\alpha + a = 0$$

$$\frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{(a-1)^2}}{1} = a-1 = r \rightarrow a = r+1$$

$$\begin{aligned} x = \beta &\rightarrow \beta^2 - (a+1)\beta + a = 0 \\ S &= a+1 = r \\ P &= a = r \end{aligned}$$

$$\Delta = b^2 - 4ac \rightarrow (a+1)^2 - 4a \rightarrow a^2 + 2a + 1 - 4a = a^2 - 2a + 1 = (a-1)^2$$

$$x^2 - (2a+1)x + b = 0$$

$$x = \alpha \rightarrow \alpha^2 - (2a+1)\alpha + b = 0 \rightarrow \alpha^2 - 2a\alpha + b = 0$$

$$x = \beta \rightarrow \beta^2 - (2a+1)\beta + b = 0 \rightarrow \beta^2 - 2a\beta + b = 0$$

$$\frac{\sqrt{\Delta}}{|a|} = \sqrt{1 - 4ab} = r \rightarrow 1 - 4ab = r^2$$

$$\begin{aligned} S &= 2a+1 = r \\ P &= b = r^2 \end{aligned}$$

$$\Delta = b^2 - 4ac \rightarrow (2a+1)^2 - 4b \rightarrow 1 - 4b$$

$$4a = r^2$$

$$b = \frac{r^2}{4} = r^2$$

$$\text{انتقال } P_2 - P_1 = r^2 - r = r$$

$$① y = -ax^2 + a(x+r) \rightarrow \text{ext}$$

$$\Delta = 4a^2 + 4a$$

$$\begin{cases} \frac{-b}{2a} = \frac{-a}{-2a} = \frac{1}{2} \\ \frac{-\Delta}{4a} = \frac{4a^2 + 4a}{-4a} = \frac{-(a+1)}{a} = -\frac{a+1}{a} \end{cases}$$

$$a = -1$$

$$② y = 2bx^2 - bx - 1 \rightarrow \text{ext}$$

$$\Delta = b^2 + 4b$$

$$\begin{cases} \frac{-b}{2a} = \frac{-b}{4b} = -\frac{1}{4} \\ \frac{-\Delta}{4a} = \frac{-(b^2 + 4b)}{4b} = -\frac{b(b+4)}{4b} = -\frac{b+4}{4} \end{cases}$$

$$b = -4$$

$$y = \omega \alpha x^2 + \tau x + \beta$$

$$\xrightarrow{x=\alpha} \omega \alpha^2 + \tau \alpha + \beta = 0$$

$$\xrightarrow{x=\beta} \omega \alpha \beta^2 + \tau \beta + \beta = 0 \quad \omega \alpha \beta^2 + \omega \beta = 0$$

$$\omega \beta (\omega \alpha \beta + 1) = 0$$

$$S = \frac{\tau}{\omega \alpha} = \alpha + \beta$$

$$P = \frac{\beta}{\omega \alpha} = \alpha \beta \rightarrow \omega \alpha^2 = 1 \rightarrow \alpha = \frac{1}{\omega}$$

$$\alpha < \beta \rightarrow \alpha = -\frac{1}{\omega} \quad \beta = 1$$

$$y = -\omega x^2 + \tau x + 1 \rightarrow \text{ent} \begin{array}{l} \frac{1}{\omega} \\ 1 \end{array}$$



$$\begin{array}{r} 1 \\ \omega \end{array}$$

$$(1, \frac{1}{\omega})$$

$$x^2 - (a^2 + b^2 - 1)x + a^2 + b^2 - 1 = 0$$

$$S = a + b - P = a + b$$

$$a^2 + b^2 - 1 = a + b \rightarrow S^2 - 2P - 1 = S \rightarrow S^2 - 2(S - 1) - 1 = S$$

$$a + b = S - 1 \quad S^2 - 2S - 1 = S \rightarrow S^2 - 3S - 1 = 0$$

$$(S - \omega)(S + \tau) = 0$$

$$\boxed{S = \tau + \omega}$$

$$S = -\tau$$

دون مطيعين



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