

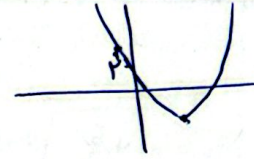
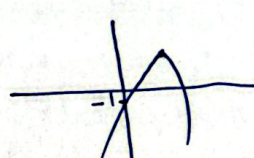


الف)  $y = 3x^2 - 2x \rightarrow \min \left| \begin{array}{l} -\frac{b}{2a} = \frac{1}{3} \\ -\frac{1}{3} \end{array} \right.$   از ناصبه ۳ میگذرد.

ب)  $y = -x^2 + 2x \rightarrow \max \left| \begin{array}{l} -\frac{b}{2a} = 1 \\ 2 \end{array} \right.$   از ناصبه ۱ نمیگذرد.

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الف)  $y = 2x^2 - 2x + 2 \rightarrow \min \left| \begin{array}{l} -\frac{b}{2a} = \frac{1}{2} \\ -\frac{1}{2} \end{array} \right.$   از ناصبه ۱ و ۳ میگذرد.

ب)  $y = -x^2 + 2x - 1 \rightarrow \max \left| \begin{array}{l} -\frac{b}{2a} = 1 \\ -1 \end{array} \right.$   از ناصبه ۱ و ۳ میگذرد.

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$x^2 - m - 3 = 0 \rightarrow S = 1 \quad / \quad P = -3 \quad / \quad |\alpha - \beta| = \frac{\sqrt{b^2 - 4ac}}{2a} = \frac{\sqrt{13}}{1} = \sqrt{13}$

الف)  $\frac{\alpha + \beta}{\alpha - \beta} = \frac{S}{|\alpha - \beta|} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

ب)  $\alpha^2 + \beta^2 = S^2 - 2P = 1 - 2(-3) = 7$

ج)  $\alpha^2 + \beta^2 = S^2 - 2SP = 1 - 2(-3) = 7$

د)  $\alpha^3 - \beta^3 = (\alpha - \beta)^3 + 3\alpha\beta(\alpha - \beta) = 13\sqrt{13} + 3(-3)(\sqrt{13}) = 4\sqrt{13}$

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$y = (m-2)(m^2 - am + a) \rightarrow m > 2 \rightarrow a^2 - 2a < 0 \rightarrow a(a-2) < 0$

$\frac{0}{+} \quad \frac{2}{-} \quad \frac{+}{+}$

①  $0 < a < 2$

$\Delta \geq 0 \rightarrow (m-2)^2 = m^2 - 2m + 2 \rightarrow a = 2$

① U ② :  $0 < a \leq 2$

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$3x^2 - 12x - a = 0 \rightarrow S = \alpha + \beta = 4 \rightarrow \beta = 4 - \alpha$

$2\alpha^2 + \beta^2 - 2\alpha < 7 \rightarrow 2\alpha^2 + (4 - \alpha)^2 - 2\alpha - 7 < 0 \rightarrow \alpha^2 - 2\alpha + 7 = 0 \rightarrow (\alpha - 1)(\alpha - 3) = 0$

$\rightarrow \alpha = 1, 3$

$\hookrightarrow 3 - 12 - a = 0 \rightarrow a = -9 \rightarrow \frac{9}{3}, \frac{-9}{3} = -3$

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$$\begin{aligned}
 a^{-r} \in \mathbb{N} &\rightarrow a^{-r} > 0 \rightarrow a > r \\
 v^{-r} a \in \mathbb{N} &\rightarrow v^{-r} a > 0 \rightarrow a < v r \\
 &\rightarrow S(a, r) \\
 \rightarrow \frac{1+Na+9b+c}{1+a+b+c} &\left\{ \begin{array}{l} 1 \cdot a + 1 \cdot b \geq 0 \rightarrow 1 \cdot a + b \geq 0 \rightarrow b \geq -1 \cdot a \\ 1 \cdot a + 1 \cdot a + c \rightarrow 2a + c \\ r \cdot r a + a \cdot (-1 \cdot a) + c + r \cdot r a - a \cdot a + c \rightarrow r a a = c - r \end{array} \right. \left\{ \begin{array}{l} r a a - 9a = c - r - c + 1 \rightarrow a = \frac{1}{r} \\ \rightarrow a = \frac{1}{r} \rightarrow \frac{r}{r} = c - 1 \rightarrow c = \frac{r}{r} \rightarrow \boxed{\text{MOV} = \frac{1}{r}} \end{array} \right.
 \end{aligned}$$

$$\begin{aligned}
 a n^r - a n - b = 0 &\rightarrow \alpha + \beta = 1 \quad | \quad \alpha \beta = \frac{-b}{a} \\
 \Sigma \beta^r = r \cdot \alpha^r - r \cdot \beta = 14 &\rightarrow \Sigma (1 - \alpha)^r + r \cdot \alpha^r - r \cdot (1 - \alpha) = 14 \rightarrow 4 \cdot \alpha^r - 4 \cdot \alpha + 4 = 0 \\
 -\alpha^r - \alpha + \frac{1}{r} = 0 &\rightarrow \Delta = \frac{r}{4} \\
 \rightarrow |\alpha_1 - \alpha_2| = \frac{\sqrt{\Delta}}{|a|} = \frac{\frac{r}{4}}{1} = \frac{r}{4} = \frac{r \sqrt{a}}{4} &\rightarrow \boxed{\frac{r \sqrt{a}}{4}}
 \end{aligned}$$

$$\begin{aligned}
 \text{Orbits} = \frac{-d \pm 1}{r} = x &\rightarrow \text{ent } \cup \text{ob} \rightarrow y = -\frac{1}{r}, c = \frac{r}{r} \\
 y = a n^r + b n + \frac{r}{r} &\rightarrow \Sigma a - r b + \frac{r}{r} = -\frac{1}{r} \rightarrow b - r b = -\frac{1}{r} - \frac{r}{r} \rightarrow b = r, a = \frac{1}{r} \\
 r a a - a b + \frac{r}{r} = a + b + \frac{r}{r} &\rightarrow \epsilon a = b \\
 \rightarrow \frac{1}{r} n^r + r n + \frac{r}{r} = y &\rightarrow \frac{1}{r} \times 1 = r a + \frac{r}{r} = \frac{1}{r} = 2 \rightarrow \boxed{\beta = 2}
 \end{aligned}$$

$$\begin{aligned}
 n^r + 4 n = a = 0 &\rightarrow \alpha = -r + \sqrt{9-a} \rightarrow \alpha^r = 11 - a - 4\sqrt{9-a} \\
 \beta = -r - \sqrt{9-a} &\rightarrow \beta^r = 11 - a + 4\sqrt{9-a} \\
 \rightarrow r \alpha^r + r \beta^r = 9 \cdot -2a - 4\sqrt{9-a} = 12\sqrt{r} + 14 &\rightarrow 2a + 4\sqrt{9-a} = 9 + 4\sqrt{11} \rightarrow \boxed{a = 1}
 \end{aligned}$$

$$\begin{aligned}
 \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{b}} = 2 &\rightarrow \frac{\sqrt{a} + \sqrt{b}}{\sqrt{ab}} = 2 \rightarrow \sqrt{a} + \sqrt{b} = 2\sqrt{ab} \\
 S + r\sqrt{p} = r a + p = S + r\sqrt{\frac{1}{r^4}} = \frac{r a}{r^4} &\rightarrow S = \frac{14}{r^4} \rightarrow \frac{r+12}{r^4} = \frac{14}{r^4} \\
 \rightarrow n = -1 &\rightarrow m n^r + r n + r = -n^r + r n + r \rightarrow p = \frac{c}{a} = \frac{r}{1} = \boxed{-r}
 \end{aligned}$$