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هم (ختر)

سارینا زارع

تاریخ ۲۴

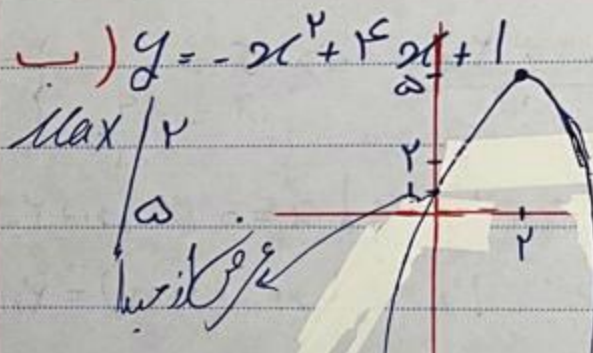
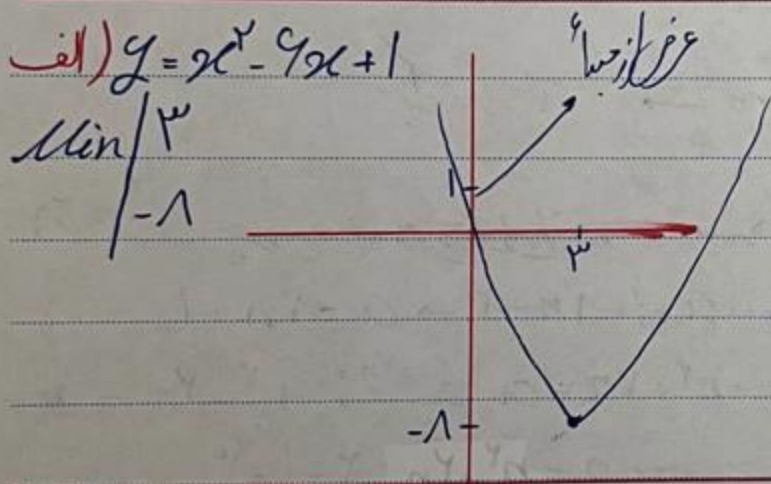
الف) $y = 2x^2 - 4x + 1 \rightarrow \Delta = (-4)^2 - (4 \times 2 \times 1) = 16 - 8 = 8$ ①

ا) $\rightarrow$ Min $\left| \begin{array}{l} \frac{-b}{2a} \\ \frac{-\Delta}{4a} \end{array} \right. \rightarrow \left. \begin{array}{l} \frac{-4}{4} = -1 \\ \frac{-8}{8} = -1 \end{array} \right\} \text{ext} \left| \begin{array}{l} 1 \\ -1 \end{array} \right. \rightarrow \text{Min}$ س

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ب) $y = -2x^2 + 3x - 5 \rightarrow \Delta = 9 - 40 = -31$

ا) $\rightarrow$ Max $\left| \begin{array}{l} \frac{-b}{2a} \\ \frac{-\Delta}{4a} \end{array} \right. \rightarrow \left. \begin{array}{l} \frac{-3}{-4} \\ \frac{-31}{8} \end{array} \right\} \rightarrow \text{Max}$ س
 حاکسیم دار چون $a < 0$



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$4x^3 + kx^2 - 9x - 2 = 0$

$\alpha + \beta = 1 \Rightarrow \alpha + \beta + \gamma = \frac{-k}{4} \rightarrow 1 - \frac{1}{4} = \frac{-k}{4} \rightarrow k = -3$ ③

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

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$x^2 - 3mx + m = 0 \rightarrow \Delta = 9m^2 - 4m$ ④

$\sqrt{\alpha} - \sqrt{\beta} = 1$

$|x_1 - x_2| = \frac{\sqrt{\Delta}}{|a|} \Rightarrow \sqrt{9m^2 - 4m} = 1 \rightarrow 9m^2 - 4m - 1 = 0$ ★

★ $\Delta = (-4)^2 - 4 \times 9 \times (-1) = 16 + 36 = 52 \rightarrow m = \frac{4 \pm \sqrt{52}}{18} \rightarrow \sqrt{52} = 2\sqrt{13}$

$m = \frac{4 \pm \sqrt{13}}{9}$

ب) $2x^2 + mx - m = 0 \rightarrow \rho = \frac{c}{a} = \frac{-m}{2} \rightarrow \frac{-m}{2} = -\frac{4 \pm \sqrt{13}}{18} = \frac{4 \pm \sqrt{13}}{9}$

$\left[\rho = \frac{1}{2} \right]$

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$$y = 2x^2 - (m+2)x + m = 0 \xrightarrow{a+b+c=0} x=1 \quad x = \frac{m}{1} = m, y(0) = m \quad (5)$$

$$S = \frac{1}{2} \left| m \left(\frac{m}{2} - 1 \right) \right| \rightarrow \left| m \left(\frac{m}{2} - 1 \right) \right| = \frac{3}{2} \rightarrow \left| m(m-2) \right| = 3 \rightarrow \begin{matrix} m = -1 \rightarrow \frac{m}{2} = -\frac{1}{2} \\ m = 3 \rightarrow \frac{m}{2} = \frac{3}{2} \end{matrix}$$

$$\frac{m}{2} = \left[-\frac{1}{2} \right], \left[\frac{3}{2} \right]$$

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$$y = ax^2 + 3x + a \rightarrow y_{\min} = \frac{-\Delta}{4a} = \frac{9a^2 - 9}{4a} = a - \frac{9}{4a} \quad (6)$$

$$\Delta = 9 - 4a^2$$

$$a - \frac{9}{4a} = \frac{1}{2} \xrightarrow{\times 4a} 4a^2 - 18 = 2a \rightarrow 4a^2 - 2a - 18 = 0$$

$$\Delta = (2)^2 - 4 \times 4 \times (-18) = 4 + 288 = 292 \rightarrow \sqrt{292} = 2\sqrt{73}$$

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$$a = \frac{2 \pm 2\sqrt{73}}{8} \Rightarrow \begin{matrix} a = 2 \\ a = -\frac{9}{2} \end{matrix} \left. \vphantom{\begin{matrix} a = 2 \\ a = -\frac{9}{2} \end{matrix}} \right\} a > 0 \rightarrow a \text{ یکتا}$$

$$x^2 - (a+1)x + a = 0 \rightarrow n+2, n \text{ ریشه‌های } \rightarrow \quad (7)$$

$$S = -\frac{b}{a} = 1 + a = n + (n+2) = 2n+2 \rightarrow a+1 = 2n+2 \rightarrow a = 2n+1$$

$$P = \frac{c}{a} = a, P = n(n+2) = n^2 + 2n \rightarrow n^2 + 2n = a \xrightarrow{a=2n+1} n^2 + 2n = 2n+1$$

$$n^2 = 1 \rightarrow n = 1 \rightarrow a = 2n+1 = 2+1 = 3 \quad \text{چون طبیعی است این مورد}$$

$$x^2 - (3a+1)x + b = 0 \xrightarrow{a=3} 3a+1 = 10 \rightarrow$$

$$x^2 - 10x + b = 0 \rightarrow \text{ریشه‌های } m+2, m \text{ ریشه‌های}$$

$$S = 2m+2 = 10 \rightarrow 2m = 8 \rightarrow m = 4 \rightarrow \text{ریشه‌ها } 4, 6 \rightarrow P = 4 \times 6 = 24$$

$$\star, \star\star \rightarrow 24 - 3 = 21$$

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$$y_1 = -ax^2 + ax + 2 \rightarrow x_{1max} = \frac{-a}{2(-a)} = \frac{1}{2}$$

$$y_{1max} = -a\left(\frac{1}{2}\right)^2 + a\left(\frac{1}{2}\right) + 2 = \frac{-a}{4} + \frac{a}{2} + 2 = \frac{a}{4} + 2$$

①

نقطة التقاطع: $y_1(x_1) = y_2(x_1)$

$$y_2\left(\frac{1}{2}\right) = 2b\left(\frac{1}{2}\right)^2 - b\left(\frac{1}{2}\right) - 1 = \frac{b}{2} - \frac{b}{2} - 1 = -1$$

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$$\frac{a}{4} + 2 = -1 \rightarrow \frac{a}{4} = -3 \rightarrow a = -12$$

$$y_2 = 2bx^2 - bx - 1 \rightarrow x_{2min} = \frac{-b}{2 \times 2b} = \frac{1}{4}$$

$$y_2(x_2) = 2b\left(\frac{1}{4}\right)^2 - b\left(\frac{1}{4}\right) - 1 = 2b \times \frac{1}{16} - \frac{b}{4} - 1 = \frac{-b}{4} - 1$$

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$$\rightarrow y_1(x_2) = -a\left(\frac{1}{4}\right)^2 + a\left(\frac{1}{4}\right) + 2 = \frac{3}{4} - 1 = -\frac{1}{4}$$

$$-\frac{1}{4} = \frac{-b}{4} - 1 \rightarrow -\frac{1}{4} + 1 = \frac{-b}{4} \rightarrow \frac{-b}{4} = \frac{3}{4} \rightarrow b = -9$$

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$$b - a = -9 - (-12) = 12 - 9 = 9 \quad \checkmark$$

$$\alpha\beta = \frac{\beta}{2a\alpha} \rightarrow \alpha^2 = \frac{1}{2a} \rightarrow \alpha = \pm \frac{1}{\sqrt{2a}}$$

②

$$x = a \rightarrow 2a\alpha \times \frac{1}{\sqrt{2a}} + \alpha + \beta = 0 \rightarrow \sqrt{2a}\alpha + \beta = 0 \rightarrow \beta = -\sqrt{2a}\alpha$$

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$$\beta > 0 \rightarrow \alpha = -\frac{1}{\sqrt{2a}}$$

$$\beta = 1$$

$$x_{\text{ش}} = \frac{-b}{2a} = \frac{-(-9)}{2(-12)} = \frac{9}{-24} = -\frac{3}{8}$$

$$y_{\text{ش}} = -12\left(-\frac{3}{8}\right)^2 + (-12)\left(-\frac{3}{8}\right) + 2 = \frac{9}{8}$$

$$\text{ext} \left| \begin{array}{c} \frac{3}{8} \\ \frac{9}{8} \end{array} \right|$$

→ نقطة التقاطع

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$$a+b=S=\frac{-b}{a}=a^2+b^2-12=S^2-2p-12 \rightarrow p=S-1 \quad (10)$$

$$a \cdot b = a+b-1 \Rightarrow p = S-1$$

بازرسی: $S = S^2 - 2S + 2 - 12 \Rightarrow S^2 - 3S - 10 = 0 \rightarrow \begin{cases} S = 5 \\ S = -2 \end{cases}$

$S = -2 \rightarrow$ طبیعی نیست

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