۲۵

۱)

الف) $y = +2x^2 - 4x + 1$

$-\frac{b}{2a} = \frac{4}{4} = 1$

$y \Rightarrow 2 - 4 + 1 = -2 + 1 = -1$

$\min \begin{vmatrix} 1 \\ -1 \end{vmatrix}$

ت.ع min است.

ب) $y = -2x^2 + 3x - 5$

$-\frac{b}{2a} = +\frac{3}{4}$

$y \Rightarrow -\frac{31}{8}$

$\max \begin{vmatrix} +\frac{3}{4} \\ -\frac{31}{8} \end{vmatrix}$

ت.ع max است.

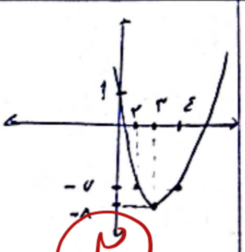
۳

۲)

$y = x^2 - 6x + 1$

$\min \begin{vmatrix} +\frac{6}{2} = 3 \\ -8 \end{vmatrix}$

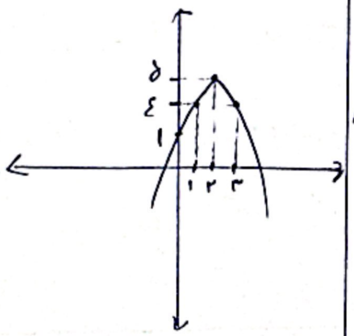
x	2	3	4
y	-7	-8	-7



$y = -x^2 + 4x + 1$

x	1	2	3
y	4	5	4

$\max \begin{vmatrix} +2 \\ 5 \end{vmatrix}$



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۳)

$\alpha + \beta = 1 \quad \alpha = 1 - \beta \quad (1-\beta)(\beta) = -2 \Rightarrow \beta^2 - \beta - 2 = 0 \quad \beta = -1, 2$

$(\beta - 2)(\beta + 1)$

$\beta = -1 \Rightarrow \quad f(-1) + k - 9(-1) - 2 = 0$

$-4 + k + 9 - 2 = 0 \quad 3 + k = 0 \quad k = -3 \Rightarrow$ ✗

[illegible]

۳

۴)

$x^2 - 3mx + m = 0 \quad (\sqrt{\alpha} - \sqrt{\beta} = 1)^2 \Rightarrow \alpha + \beta - 2\sqrt{\alpha \cdot \beta} - 1 = 0$

$\Rightarrow^* \alpha + \beta = 3m / \alpha \cdot \beta = m \Rightarrow 3m - 2\sqrt{m} - 1 = 0 \Rightarrow (\sqrt{m} = t) \Rightarrow$

$3t^2 - 2t - 1 = 0 \quad t = +1, -\frac{1}{3}$ غ ق ق $\Rightarrow \sqrt{m} = 1 \Rightarrow m = 1$

$2x^2 - x - 1 = 0 \quad \frac{c}{a} = -\frac{1}{2}$ ✗

۳

۵)

$y = 2x^2 + (m+2)x + m$ ... $\frac{|m-2|}{m}$ ... $m(m-2) = 3$ ... $m = -1$ ✓ ... $m = 3$ غ ق ق

$a>0 \Rightarrow$ ریشه‌ها مثبت باشند $\qquad ax^2+3x+a$

$-\dfrac{\Delta}{4a} = \dfrac{7}{8} \Rightarrow \dfrac{-(9-4a^2)}{4a} \Rightarrow \dfrac{-(9-4a^2)}{4a} = \dfrac{7}{8} \quad \dfrac{4a^2-9}{4a} = \dfrac{7}{8}$ (۶)

$32a^2 - 28a - 72 = 0 \Rightarrow 4(8a^2 - 7a - 18) = 0 \Rightarrow a^2 - 7a - 144 = 0$

$(a+9)(a-16) \Rightarrow a = -\dfrac{9}{8}$ غ ق ق $\quad a = \dfrac{16}{8} = 2$ ✓ — ۲

$x^2-(a+1)x+a=0 \quad \dfrac{\sqrt{\Delta}}{|a|}=2 \quad \sqrt{(a-1)^2}=2 \quad |a-1|=2 \quad \begin{cases} a=3 & ① \Rightarrow 2a+1 = ⑦ \\ a=-1 & ② \end{cases}$ ✗

$① \Rightarrow x^2-4x+3 \Rightarrow$ ریشه‌ها $x = +3, +1$ ✓ $\qquad ② \Rightarrow x^2-1 \Rightarrow$ ریشه $= x = +1, -1$

$x^2-(2a+1)x+b=0 \qquad \sqrt{\dfrac{\Delta}{|a|}} = 2 \Rightarrow \sqrt{4a^2+1+4a-4b} = 2 \Rightarrow a=3 \Rightarrow$ (۷)

$\left(\sqrt{36+1+12-4b} = 2\right)^2 \Rightarrow 49 - 4b = 4 \quad 4b = 45 \quad b = \dfrac{45}{4}$ ✗ $\quad 24 - 3 = 21$ ✗ — ۲

$y = -ax^2 + ax + 2 \qquad S \left| \begin{matrix} \frac{1}{2} \\ \frac{a+8}{4} \end{matrix} \right. \Rightarrow \dfrac{b}{2} - \dfrac{b}{4} - 1 = \dfrac{a+8}{4} \Rightarrow \dfrac{a+8}{4} = -1 \Rightarrow a = -12$ ✗

$y = 2bx^2 - bx - 1 \quad S \left| \begin{matrix} \frac{1}{4} \\ \frac{-b-8}{4} \end{matrix} \right. \Rightarrow \dfrac{12}{16} - \dfrac{12}{4} + 2 = \dfrac{-b-8}{4}, \ \dfrac{12-48+32}{16} = \dfrac{-b-8}{4}$ (۸)

$\Rightarrow b = -6$ ✗ $\qquad -6+12 = 6$ ✗ — ۲

$y = 25\alpha x^2 + 4x + \beta \Rightarrow \begin{cases} 25\alpha^3 + 4\alpha + \beta = 0 & ① \\ 25\beta\alpha + 5\beta = 0 \Rightarrow 5\beta(5\alpha\beta+1) \Rightarrow \beta = 0 \Rightarrow 25\alpha x^2 + 4x & \text{غ ق ق} \end{cases}$ (۹)

$\beta\alpha = -\dfrac{1}{5} \Rightarrow \dfrac{\beta}{25\alpha} \Rightarrow \beta = -5\alpha$ ✗

$* \quad ① \Rightarrow 25\alpha^3 + 4\alpha + \beta = 0 \Rightarrow 25\alpha^3 - \alpha = 0 \Rightarrow \underset{0}{\alpha}(\underset{\pm 1}{25\alpha^2 - 1}) = 0$

$\begin{cases} \alpha = 0 \Rightarrow \alpha \text{ غ ق ق} \Rightarrow a = 0 \\ \alpha = -\frac{1}{5} \Rightarrow \beta = +1 \checkmark \\ \alpha = \frac{1}{5} \Rightarrow \beta = -1, \ \beta < \alpha \text{ غ ق ق} \end{cases}$ ✗

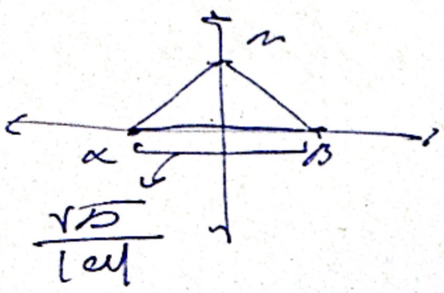
$\left.\begin{matrix} \alpha = -\frac{1}{5} \\ \beta = 1 \end{matrix}\right\} \Rightarrow -5x^2 + 4x + 1 \Rightarrow S \left| \begin{matrix} \frac{2}{5} \\ \frac{9}{5} \end{matrix} \right. \Rightarrow$ **گزینه ۱**

$x^2 - (a^2+b^2-12)x + a+b-1 = 0 \qquad a+b = a^2+b^2-12 \Rightarrow S^2 - 2P - 12 = S$

$a \cdot b = a+b-1 \Rightarrow S-1 = P \qquad S^2 - 2S + 2 - 12 = S$ (۱۰)

$\Rightarrow S^2 - 3S - 10 = 0 \Rightarrow (\underset{+5}{S-5})(\underset{-2}{S+2})$ — ۳

جواب ← $\begin{cases} S = 5 \quad \boxed{a+b=5} \quad P = 4 \\ S = -2 \quad \alpha+\beta = -2 \quad P = -3 \Rightarrow \text{مختلف العلامت} \times \text{طبیعی} \text{ غ ق ق} \end{cases}$



$\frac{\sqrt{\Delta}}{|a|}$

مساحت $= \frac{1}{2} \times \frac{\sqrt{\Delta}}{|a|} \times m = |\frac{3}{4}|$ پاسخ: ۱

$y = 2x^2 - (m+2)x + m \Rightarrow S = \frac{\sqrt{(m-2)^2}}{2} \times \frac{1}{2} \times m = |\frac{3}{4}|$

$\Rightarrow \frac{m|m-2|}{4} = |\frac{3}{4}| \Rightarrow m|m-2| = |3|$

$m|m-2| = |3|$

- $m \geq 2$: $m^2 - 2m - 3 = 0 \Rightarrow (m-3)(m+1) = 0$, $m = 3$ ✓ ، $m = -1$ غ‌ق‌ق
- $m < 2$: $m^2 - 2m + 3 = 0 \Rightarrow \Delta < 0$ غ‌ق‌ق

$y = x^2 - 5x + 1$

$S = |\frac{+3}{2}|$