۱- ب) $y = -2x^2 + 3x - 5$

$\Delta = 9 - 40 = -31$

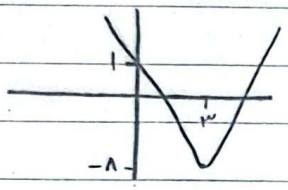
max: $-\frac{b}{2a} = -\frac{3}{-4} = \frac{3}{4}$; $-\frac{\Delta}{4a} = -\frac{-31}{8}$

ا) $\Delta = 16 - 8 = 8$

min: $-\frac{b}{2a} = 1$; $-\frac{\Delta}{4a} = \frac{-8}{8} = -1$

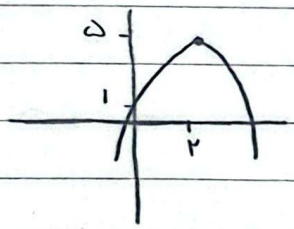
۲- ا) $y = x^2 - 6x + 1$ $\Delta = 36 - 4 = 32$

min: 3 ; $-\frac{32}{4} = -8$



ب) $-x^2 + 4x + 1$ $\Delta = 16 + 4 = 20$

max: $-\frac{b}{2a} = 2$; $-\frac{\Delta}{4a} = 5$



$\sqrt{a} - \sqrt{b} = 1 \Rightarrow a + b - 2\sqrt{ab} = 1 \Rightarrow 3m - 2\sqrt{m} = 1$

$\Rightarrow m = 1 \Rightarrow 2x^2 - x - 1 = 0 \Rightarrow \frac{c}{a} = -\frac{1}{2}$

(۴) ⇄ (۳)

$\alpha\beta = -2$, $\alpha + \beta = 1 \Rightarrow \begin{matrix} \alpha = 2 \\ \beta = -1 \end{matrix}$

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

$S = \frac{1}{2}(\alpha - \beta) \times m$ $\quad \frac{\sqrt{\Delta}}{|a|} \times m \times \frac{1}{2} = \frac{3}{4} \Rightarrow \sqrt{\frac{m^2 + 4m + 4 - 16}{1}} \times m \times \frac{1}{2} = \frac{3}{4}$ $\quad -0$

$\Rightarrow \sqrt{m^2 - 4m + 4} \times m = 3 \Rightarrow |m - 2| \times m = 3$ $\quad m \geq 2 \rightarrow m^2 - 2m - 3 = 0$ ↳ $m = 3$ ✓ ; ↳ $m = -1$ ✗

$m < 2 \Rightarrow m^2 + 2m - 3 = 0 \rightarrow \Delta < 0$

$y = x^2 - mx + 1 \Rightarrow -\frac{b}{2a} = \frac{m}{2} = \frac{3}{2}$

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$-\frac{\Delta}{4a} = \frac{V}{8} \Rightarrow \frac{4a^2-9}{4a} = \frac{V}{8} \Rightarrow 32a^2 - 28a - 72 = 0 \Rightarrow 8a^2 - 7a - 9 = 0$ -۶

$\Rightarrow a^2 - 7a - 144 = 0 \Rightarrow (a-16)(a+9) = 0 \Rightarrow a \begin{cases} \nearrow 16 \\ \searrow -9 \end{cases} \Rightarrow a \begin{cases} \nearrow 2 \\ \searrow -\frac{9}{8} \end{cases}$

$\frac{\sqrt{\Delta}}{|a|} = 2 \Rightarrow \frac{\sqrt{a^2+2a+1-4a}}{1} = 2 \Rightarrow \frac{\sqrt{a^2-2a+1}}{1} = 2$ -۷

$\Rightarrow \frac{a-1}{1} = 2 \Rightarrow a-1 = 2 \Rightarrow a = 3 \Rightarrow x^2 - 4x + 3^2 = 0 \Rightarrow (x-1)(x+3)$

$\frac{\sqrt{\Delta}}{|a|} = 2 \Rightarrow \frac{\sqrt{16-4b}}{1} = 2 \Rightarrow 16-4b = 4 \Rightarrow b = 3 \Rightarrow x^2 - 10x + 24 = 0$

$\Rightarrow (x-4)(x-6) \Rightarrow (6 \times 4) - (3 \times 1) = 21$

$\frac{-b}{2a} = \frac{-a}{-2a} = \frac{1}{2}$, $\frac{-\Delta}{4a} = \frac{a^2+8a}{4a}$, $\frac{-b}{2a} = \frac{b}{4b} = \frac{1}{4}$, $\frac{-\Delta}{4a} = \frac{b^2+8b}{8b} - 8$

$\Rightarrow 2bx^2 - bx + 1 = 0 \Rightarrow x = \frac{1}{2} \Rightarrow \frac{1}{2}b - \frac{1}{2}b - 1 = \frac{a^2+8a}{4a} \Rightarrow a^2+8a = -4a \Rightarrow$

$a^2+12a = 0 \Rightarrow a(a+12) = 0 \quad a \neq 0 \quad -12 \checkmark \quad -ax^2+ax+2 \Rightarrow 12x^2-12x+2 \Rightarrow x = \frac{1}{4}$

$\Rightarrow -\frac{1}{4} = \frac{b^2-8b}{8b} \Rightarrow -8b = 4b^2 - 32b \Rightarrow 4b^2 + 40b = 0 \Rightarrow 4b(b+10) = 0$

$\Rightarrow b = -10 \Rightarrow -10 - (-12) = 2$

$\alpha+\beta = \frac{-4}{25a}$, $\alpha\beta = \frac{b}{25a} \Rightarrow 25a^2 + 25ab = -4$, $25a^2 b = 5$ -۹

$\Rightarrow 25a^2 = 1 \Rightarrow a = \pm\frac{1}{5} \Rightarrow 25ab = -5 \Rightarrow 25 \times \frac{1}{5} \times b \Rightarrow b = -1$

$b > a \Rightarrow b = 1$ $\qquad 25 \times (-\frac{1}{5} \times b) \Rightarrow b = 1$

$b = 1 \checkmark \Rightarrow \alpha = -\frac{1}{5}$, $\beta = 1$ گزینه ۱

$x^2 - (a^2+b^2-12)x + (a+b-1) = 0 \Rightarrow S \Rightarrow a^2+b^2-12 = a+b$ ① -۱۰

$P \Rightarrow a+b-1 = ab$ ②

$a^2+b^2 = (a+b)^2 - 2ab \Rightarrow ①,② \underbrace{(a+b)^2}_{y^2} - 2\underbrace{(a+b-1)}_{y} - 12 = \underbrace{a+b}_{y}$

$y^2 - 3y - 10 = 0 \Rightarrow (y-5)(y+3) = 0 \begin{cases} a+b = 5 \\ a+b = -3 \end{cases}$