Subject: ۱۹ آرین نصیری - دهم ب Date:

۱- الف) $\Delta = 16 - 8 = 8$

$$\min \begin{cases} -\frac{b}{2a} = 1 \\ -\frac{\Delta}{4a} = \frac{-8}{8} = -1 \end{cases}$$ ✓

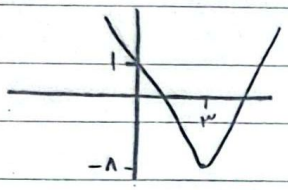
ب) $y = -2x^2 + 3x - 5$

$\Delta = 9 - 40 = -31$

$$\max \begin{cases} -\frac{b}{2a} = \frac{-3}{-4} = \frac{3}{4} \\ -\frac{\Delta}{4a} = -\frac{31}{8} \end{cases}$$ ✓ (۲)

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

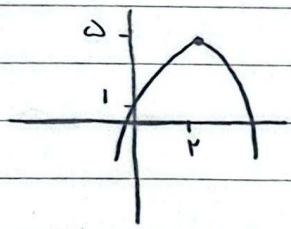
$$\min \begin{cases} 3 \\ -\frac{32}{4} = -8 \end{cases}$$



✓

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

$$\max \begin{cases} -\frac{b}{2a} = 2 \\ -\frac{\Delta}{4a} = 5 \end{cases}$$ (۲)



✓

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

$\Rightarrow m = 1 \Rightarrow 2x^2 - x - 1 = 0 \Rightarrow \frac{c}{a} = -\frac{1}{2}$ ✓ (۲)

(۴) (۳)

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

$\Rightarrow -4 + k + 9 - 2 = 0 \Rightarrow k + 3 = 0 \Rightarrow k = -3$ ✓ (۲)

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

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

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

$y = x^2 - mx + 1 \Rightarrow -\frac{b}{2a} = \frac{m}{2} = \frac{3}{2}$ (۱/۵)

$y = x^2 + x + 1 \rightarrow x_s = \frac{-b}{2a} = \frac{-1}{2}$

s.a.m

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$$-\frac{\Delta}{4a}=\frac{7}{8}\Rightarrow\frac{4a^2-9}{4a}=\frac{7}{8}\Rightarrow 32a^2-28a-72=0\Rightarrow 8a^2-7a-18=0 \quad -6$$

$$\Rightarrow a^2-7a-144=0\Rightarrow(a-16)(a+9)=0\Rightarrow a\begin{cases}16\\-9\end{cases}\Rightarrow a\begin{cases}2\\-\frac{9}{8}\end{cases}$$ (۲)

$$\frac{\sqrt{\Delta}}{|a|}=2\Rightarrow\frac{\sqrt{a^2+2a+1-4a}}{1}=2\Rightarrow\frac{\sqrt{a^2-2a+1}}{1}=2 \quad -7$$ (۲)

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

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

$$\Rightarrow(x-4)(x-6)\Rightarrow(6\times4)-(3\times1)=21$$ ✓ (۲۱- هم می‌تواند باشد)

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

$$b-a=-6-(-14)=6$$ (۱۲)

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

$$a^2+12a=0\Rightarrow a(a+12)=0\quad a\neq0,\ -12\checkmark\qquad -ax^2+ax+2\Rightarrow 12x^2-12x+2\Rightarrow x=\frac{1}{4}$$

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

$$\Rightarrow b=-10\Rightarrow-10-(-12)=2\qquad -\frac{a}{14}+\frac{a}{4}+2=\frac{-b}{8}\cdot1\rightarrow\frac{12}{14}=\frac{-b}{8}\rightarrow\boxed{b=-6}$$

$$\alpha+\beta=\frac{-4}{25a},\ \alpha\beta=\frac{b}{25a}\Rightarrow 25a^2+25ab=-4,\ 25a^2b=b \quad -9$$

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

$$b>a\Rightarrow b=-1\qquad 25\times\left(-\frac{1}{5}\times b\right)\Rightarrow b=1$$ (۲)

$$b=1\checkmark\Rightarrow\alpha=-\frac{1}{5},\ \beta=1$$ (۱) حسابی ✓

$$x^2-(a^2+b^2-12)x+(a+b-1)=0\Rightarrow S\Rightarrow a^2+b^2-12=a+b\quad(1) \quad -10$$

$$P\Rightarrow a+b-1=ab\quad(2)$$

$$a^2+b^2=(a+b)^2-2ab\Rightarrow(1),(2)\ \underbrace{(a+b)^2}_{y^2}-2\left(\underbrace{a+b}_{y}-1\right)-12=\underbrace{a+b}_{y}$$ (۲)

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