آیناز کریم‌زاده - تکلیف ۱۲ - یازدهم دختر B

17,25

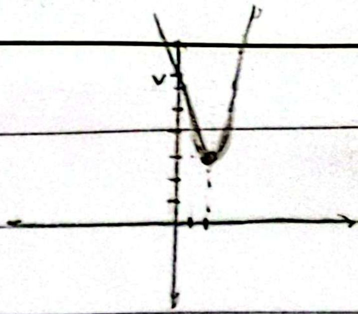
SUBJECT:

Year: Month: Day:

Page : ( )

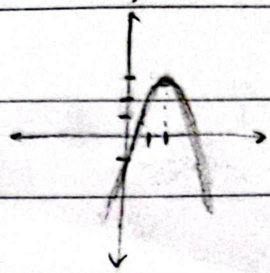
سوال ۱)

الف) $x^2-4x+7=y$ ext | $-\frac{b}{2a}=\frac{4}{2}=2$ ؛ 3



5

ب) $y=-x^2+4x-1 \to$ ext | $-\frac{b}{2a}=\frac{-4}{-2}=2$ ؛ 3



سوال ۲) $2x^2+(m+1)x+\frac{1}{2}m+2=0$

الف) دو ریشه متمایز: $\Delta>0 \to (m+1)^2-4(2)(\frac{1}{2}m+2) \Rightarrow$

$m^2+2m+1-4m-16>0 \to m^2-2m-15>0 \to (m-5)(m+3)>0$ ؛ $-3 \quad 5$ ؛ $+\,|\,-\,|\,+$ $\to$ $m>5$ ، $m<-3$

ب) یک ریشه مضاعف $\to \Delta=0 \to m^2-2m-15=0 \to m=-3,5$

ج) ریشه حقیقی نداشته باشد $\to \Delta<0 \to m^2-2m-15<0 \to -3<m<5$

5

د) ریشه داشته باشد $\to \Delta\geq0 \to m^2-2m-15\geq0 \to$ $m\geq5$ ، $m\leq-3$

سوال ۳) $y=(m-2)x^2-2(m+1)x+10$

الف) دو ریشه منفی $\to \Delta>0 \to 4(m+1)^2-40(m-2)>0$

$4m^2+8m+4-40m+80>0$ ؛ $P>0 \to \frac{10}{m-2}>0 \to m>2$

$S<0 \to \frac{2m+2}{m-2}<0 \to$ $-1 \quad 2$ ؛ $+\,|\,-\,|\,+$ $\Rightarrow$ ~~$m>2$~~ $m\in\{\emptyset\}$

$4m^2-32m+84>0$ ✓

1,5

ب) $\alpha\beta<0 \to P<0 \to \frac{10}{m-2}<0 \to m<2$

$|\alpha|>|\beta| \to \alpha+\beta<0 \to S<0 \to \frac{2m+2}{m-2}<0 \to$ $-1 \quad 2$ ؛ $+\,|\,-\,|\,+$ $\Rightarrow$ $-1<m<2$

سوال ۴)

الف) $\Delta>0 \to 4(m+1)^2-40(m-2)>0 \to 4m^2-32m+84>0$ ✓

$P<0 \to \frac{10}{m-2}<0 \to m<2 \Rightarrow m<2$

5

ب) $\frac{-b}{2a}=-2 \to \frac{2(m+1)}{2(m-2)}=-2 \to m+1=-2m+4 \to 3m=3 \to m=1$

سوال

$$\frac{2x^2}{3} - (2\sin\alpha)x + \frac{3}{2} = 0 \to \Delta \geq 0 \to 4\sin^2\alpha - 4 \geq 0 \to \begin{array}{c|c|c} & -1 & 1 \\ + & - & + \end{array}$$

$$\begin{cases} \frac{2}{3}x^2 - 2x + \frac{3}{2} \to \boxed{x = \frac{3}{2}} \checkmark \\ \frac{2}{3}x^2 + 2x + \frac{3}{2} \end{cases}$$

(۲)

سوال

$$3x^2 - 2x - 1 = (x-1)(3x+1)$$
$$2x^2 - 3x - 5 = (x+1)(2x-5)$$

$$y = \frac{(3x^2-2x-1)(2x^2-3x-5)}{1-x^2} \to y = \frac{(x-1)(3x+1)(x+1)(2x-5)}{-(x+1)(x-1)}$$

$$\to y = -(3x+1)(2x-5) = -(6x^2 - 13x - 5) = -6x^2 + 13x + 5 = 0$$

$$\max \begin{cases} \frac{-b}{2a} = \frac{-13}{-12} \\ \frac{-\Delta}{4a} = \boxed{\frac{289}{24}} \checkmark \end{cases}$$

(۲)

سوال

$$mx^2 - (m+2)x - 2 = 0 \to 4x^2 - 6x - 2 = 0$$

$$3(\alpha+\beta) - 7 = 5\alpha\beta \to 3\left(\frac{m+2}{m}\right) - 7 = \frac{-10}{m} \to \frac{3m+6+10}{m} = +7 \to 3m+16 = +7m \to 4m = +16,\ m = 4$$

$$\alpha^2 + \beta^2 = (\alpha+\beta)^2 - 2\alpha\beta = \left(\frac{3}{2}\right)^2 - 2\left(-\frac{1}{2}\right) = \frac{9}{4} + 1 = \boxed{\frac{13}{4}}$$

(۲)

سوال

$$x^2 - 5x + 2 = 0$$

$$\frac{2\alpha + \beta^5}{5\beta^2} \times \left(\frac{\alpha^2}{\alpha^2}\right) = \frac{4\alpha^3 + \beta^3(\beta^2\alpha^2)}{5\beta^2\alpha^2} = \frac{4\alpha^3 + 4\beta^3}{4 \times 5} = \frac{\alpha^3 + \beta^3}{5} = \frac{\overset{125}{(\alpha+\beta)^3} - \overset{30}{3\alpha\beta(\alpha+\beta)}}{5} = \frac{95}{5} = \boxed{19}$$

$$\alpha\beta = 2$$
$$\alpha + \beta = 5$$

(۲)

سوال

$$y_1 = ax^2 + bx + c \to ax^2 + bx + 4 = 2x + 10 \to ax^2 + (b-2)x - 6 = 0 \xrightarrow{2} 4a + 2b - 4 - 6 = 0$$
$$\xrightarrow{-3} 9a + 3b - 6 - 6 = 0$$

$$y_2 = 2x + 10$$

$$\to 2a + b = 5 \to 3a + b = 4 \to a = -1,\ b = 7$$

$$\hookrightarrow -x^2 + 7x + 4 = 0$$

$$-\frac{b}{2a} = \frac{-7}{-2} = \boxed{\frac{7}{2}}$$

$$\begin{cases} 4a + 2b = 10 \\ 9a - 3b = 0 \end{cases} \to a = 1,\ b = 3$$
$$\alpha = \frac{-3}{2}$$

(۰,۵)

سوال

$$y = 2x^2 + (m+1)x + m + 6 \xrightarrow{y=x} x = 2x^2 + mx + x + m + 6 \to 2x^2 + mx + m + 6 = 0$$

$$D = 0$$

$$m^2 - 8m - 48 = 0$$
$$(m-12)(m+4) = 0 \to \begin{array}{c|c|c} & -4 & 12 \\ + & - & + \end{array}$$

$$\begin{cases} m \leq -4 \\ m \geq 12 \end{cases}$$

$m = -4$ ✓, 12 ✗

(۱,۲۵)