

الف) $x^2 - 8x - 9 = 0 \Rightarrow x^2 - 8x - 36 = 0$

$(x-9)(x+1) = 0 \Rightarrow x = \frac{9}{1}, \frac{-1}{1} \Rightarrow x = 9, -1$

ب) $3x^2 - 8x - 3 = 0 \Rightarrow x^2 - 8x - 9 = 0$

$(x-9)(x+1) = 0 \Rightarrow x = \frac{9}{3}, \frac{-1}{3} \Rightarrow x = 3, -\frac{1}{3}$

ج) $2x^2 - 8x - 3 = 0 \Rightarrow x^2 - 8x - 12 = 0$

$(x-6)(x+2) = 0 \Rightarrow x = \frac{6}{2}, \frac{-2}{2} \Rightarrow x = 3, -1$

د) $2x^2 - 8x - 12 = 0 \Rightarrow x^2 - 8x - 24 = 0$

$(x-12)(x+2) = 0 \Rightarrow x = \frac{12}{2}, \frac{-2}{2} \Rightarrow x = 6, -1$

الف) $x^2 - 8x - 12 = 0 \Rightarrow (x-12)(x+2) = 0 \Rightarrow x = 12, -2$

ب) $2x^2 + 5x + 3 = 0 \Rightarrow x_1, x_2 = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{-5 \pm \sqrt{25 - 24}}{2} = \frac{-5 \pm 1}{2} \Rightarrow x_1, x_2 = -1, -\frac{3}{2}$

ج) $x^2 + 2x + 3 = 0 \Rightarrow x_1, x_2 = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{-2 \pm \sqrt{4 - 12}}{2} \Rightarrow \frac{-2 \pm \sqrt{-8}}{2} \Rightarrow \frac{-2 \pm 2\sqrt{-2}}{2} \Rightarrow -1 \pm \sqrt{-2}$

د) $2x^2 + 3x - 2 = 0 \Rightarrow x_1, x_2 = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{-3 \pm \sqrt{9 + 16}}{4} \Rightarrow \frac{-3 \pm \sqrt{25}}{4} \Rightarrow \frac{-3 \pm 5}{4} \Rightarrow x_1, x_2 = \frac{2}{4}, \frac{-8}{4} \Rightarrow \frac{1}{2}, -2$

$A \times B = \{(1,2)(1,2)(2,2)(2,2)(2,2)(2,2)\}$ $B^c = \{(2,2)(2,2)(2,2)(2,2)\}$

$A \times B - B^c = \{(1,2)(1,2)\}$

الف) $m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0 \Rightarrow (m-2)(m+1) = 0 \Rightarrow m = 2 \text{ غنی و } m = -1$

ب) $m^2 = m + 2 \Rightarrow (m-2)(m+1) = 0 \Rightarrow m = 2 \text{ غنی و } m = -1$

$a^2 = 3a + 2 \Rightarrow a^2 - 3a - 2 = 0 \Rightarrow a_1, a_2 = 1, 2 \Rightarrow a = 1 \text{ غنی و } a = 2 \checkmark$

$$\text{حل} \quad x=1 \Rightarrow x^2-1=2x+b \Rightarrow a+b=0, a=-b \quad -4$$

$$x=2 \Rightarrow 2x+b, x^2 \Rightarrow 2a+b=8 \Rightarrow -b=8 \Rightarrow b=-8, a=8 \quad ab=-64$$

$$x=k \Rightarrow 2k-3, x^2-3k \Rightarrow 2k=7 \Rightarrow k=\frac{7}{2} \quad -7$$

$$8- \text{تابع نسبت} \Rightarrow y=0, \sqrt{4}, -\sqrt{4} \Rightarrow x=1 \text{ مگر} \quad (y^2-4)=(x-2)(x-1) \text{ و (الف)}$$

$$\text{تابع نسبت} \quad x=1 \Rightarrow |y|=3-1=2 \Rightarrow y=\pm 2 \quad |x|+|y|=3 \text{ (ب)}$$

$$\text{تابع نسبت} \quad y=\pm 1 \Rightarrow \sqrt{1-\cos x} = \sqrt{1-\cos x} = 1 \Rightarrow x=0 \text{ (} x=90^\circ \text{)} \quad |y|=\sqrt{1-\cos x} \text{ (ج)}$$

$$\text{جواب عدسی که به دوام زوج می آید و توان منفی باشد} \leftarrow \text{تابع است} \quad y^2=-(x+1)^2 \text{ (د)}$$

$$\begin{aligned} (x_1, y_1) \in f \quad \sqrt[3]{y_1} &= -x_1^2 + 2x_1 - 2 \\ (x_2, y_2) \in f \quad \sqrt[3]{y_2} &= -x_2^2 + 2x_2 - 2 \end{aligned} \quad \begin{aligned} -4 & \text{ (} x_1^2 + 2x_1 - 2 = x_2^2 + 2x_2 - 2 \text{)} \\ \text{تابع} & \end{aligned}$$

$$\text{ب) } y^2 + 2y = 2x \quad x_1=x_2 \Rightarrow y_1^2 + 2y_1 - y_2^2 - 2y_2 = 0 \Rightarrow y_1^2 + y_2^2 + 2y_1 - 2y_2 = 0$$

$$(y_1 - y_2)(y_1^2 + y_2^2 + y_1 y_2 + 2) = 0 \quad y_1, y_2 \neq 0$$

$$\text{تابع} \quad \text{جواب ندارد} \Rightarrow \Delta < 0 \quad y_1 = -y_2 \pm \sqrt{y_2^2 - 2y_2 - 1}$$

$$1- \text{تابع نسبت} \Rightarrow \text{هر مقداری که بخار} \quad x=0 \Rightarrow y \quad x \sin y = y \sin x \text{ (الف)}$$

$$\text{ب) } \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \Rightarrow \frac{x}{y} + \frac{y}{x} + 2 = 2 \Rightarrow \frac{x^2 + y^2 - 2xy}{xy} = 0 \Rightarrow \frac{(x-y)^2}{xy} = 0 \Rightarrow x=y$$

$$\text{تابع است} \quad (x-y)^2 = 0 \quad x=y$$