

الف $\rightarrow 9x^2 - 6x - 9 = 0 \rightarrow x^2 - 2x - 3 = 0 \rightarrow (x-3)(x+1) = 0 \quad x=3 \quad x=-1 \rightarrow x = \frac{3}{1} = \frac{3}{1} / x = -\frac{1}{1}$

ب $\rightarrow 3x^2 - 11x - 4 = 0 \rightarrow x^2 - 11x - 4 = 0 \rightarrow (x-9)(x+1) = 0 \quad x=9 \quad x=-1 \rightarrow x = \frac{9}{1} = 9 / x = -\frac{1}{1}$

ج ۱ $\rightarrow 4x^2 - 4x - 3 = 0 \rightarrow x^2 - x - 12 = 0 \rightarrow (x-4)(x+3) = 0 \quad x=4 \quad x=-3 \rightarrow x = \frac{4}{1} = 4 / x = -\frac{3}{1} = -1$

د $\rightarrow 2x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 24 = 0 \rightarrow (x-8)(x+3) = 0 \quad x=8 \quad x=-3 \rightarrow x = \frac{8}{1} = 8 / x = -\frac{3}{1}$

الف $\rightarrow x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) = 0 \quad x=7 \quad x=-2$

ب $\rightarrow 2x^2 + 5x + 3 = 0 \rightarrow \Delta = (5)^2 - 4(2)(3) = 25 - 24 = 1 \quad x = \frac{-5 \pm 1}{4} = -1 \quad x = -\frac{3}{2}$

ج ۱ $\rightarrow x^2 + 2x + 3 = 0 \rightarrow \Delta = 4 - 12 = -8 < 0 \rightarrow$ ریشه ندارد

د $\rightarrow 3x^2 + 4x - 2 = 0 \rightarrow \Delta = 16 + 24 = 40 \quad x = \frac{-4 \pm \sqrt{40}}{6}$

$A = \{1, 2, 3\} \quad B = \{2, 3\} \quad A \times B = B \times B$

$\hookrightarrow A \times B \rightarrow \{(1, 2), (1, 3), (2, 2), (2, 3), (3, 2), (3, 3)\}$

$\hookrightarrow B \times B \rightarrow \{(2, 2), (2, 3), (3, 2), (3, 3)\}$

$AB - B^2 = \{(1, 2), (1, 3)\}$

$(3, m^2) / (3, m+2)$

الف $\rightarrow \hookrightarrow m^2 = m+2 \rightarrow m(m-1) = 2 \quad \begin{cases} m=2 \rightarrow x \rightarrow (2, 4), (2, 1) \leftarrow x \\ m=-1 \rightarrow \checkmark \end{cases} \quad \hookrightarrow m = -1$

ب $\rightarrow (3, m^2) / (3, m+2) \quad \begin{cases} m=2 \rightarrow \text{if } m=2 \quad (2, 1), (2, 4) \leftarrow x \\ m=-1 \rightarrow x \rightarrow (-1, 4), (-1, 3) \leftarrow x \end{cases} \quad \hookrightarrow m = 2$

$f(x) = \{(1, x^2), (1, 4x-2), (x^2, 4x+2)\}$

$x^2 = 4x-2 \rightarrow x^2 - 4x + 2 = 0 \rightarrow (x-2)(x-1) = 0 \quad \hookrightarrow (1) \quad \hookrightarrow (2)$

$(x^2, 4x+2) \rightarrow (4, 1) \rightarrow (1, 4) \rightarrow \neq (1, 1) \quad x$

$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \rightarrow x^2 - 1 = ax + b \\ ax + b & 1 \leq x \leq 2 \rightarrow x^3 = ax + b \\ x^3 & x \geq 2 \end{cases}$$

$$\begin{cases} x^2 - ax - b - 1 = 0 \\ x^3 - ax - b = 0 \rightarrow 2 \\ x^3 - x^2 + 1 = 0 \end{cases}$$

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$$\rightarrow x^2 - 1 \quad x \leq 1 \rightarrow 1^2 - 1 = 0$$

$$\rightarrow ax + b \quad 1 \leq x \leq 2 \rightarrow 1a + b = 0, \quad 2a + b = 1$$

$$\rightarrow x^3 \quad x \geq 2 \rightarrow 2^3 = 8$$

$$\begin{cases} 1a + b = 0 \\ 2a + b = 1 \end{cases} \Rightarrow a = -1, b = 1 \Rightarrow ax + b = -x + 1$$

$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ -x + 1 & 1 \leq x \leq 2 \\ x^3 & x \geq 2 \end{cases}$$

$$2^3 - 1 = 7$$

$$\Leftrightarrow 2^3 + 1 = 9 \Rightarrow 9 = 9 \Rightarrow x = 2$$

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نموده اند 1- $\rightarrow$ if $x=0$ $y^3 - 4y = x^2 - 6x + 3 \rightarrow y^3 - 4y = 3 \rightarrow y = \pm 3$

2- $\rightarrow$ if $\cos x < 1 \rightarrow \sqrt{1 - \cos x} \rightarrow \sqrt{1 - \cos x} = \sqrt{1 - \cos x}$

3- $\rightarrow$ $y^3 + x^2 + 2x + 1 \rightarrow y^3 = -x^2 - 2x - 1$

4- $\rightarrow$ $x \sin y = y \sin x \rightarrow$ if $x = \frac{\pi}{2} \Rightarrow \frac{\pi}{2} \sin y = y \sin \frac{\pi}{2} \Rightarrow y = \frac{\pi}{2}$