

$$الف) x^2 - 8x - 9 = 0 \rightarrow (x-9)(x+1) = 0 \Rightarrow \begin{cases} x = \frac{-1}{-1} = 1 \\ x = \frac{-9}{-1} = 9 \end{cases}$$

$$ب) x^2 - 10x + 9 = 0 \Rightarrow \begin{cases} x = \frac{1}{1} = 1 \\ x = \frac{9}{1} = 9 \end{cases}$$

$$ج) x^2 - 4x - 12 = 0 \rightarrow (x-6)(x+2) = 0 \Rightarrow \begin{cases} x = \frac{6}{1} = 6 \\ x = \frac{-2}{1} = -2 \end{cases}$$

$$د) x^2 - 5x - 24 = 0 \rightarrow (x-8)(x+3) = 0 \Rightarrow \begin{cases} x = \frac{8}{1} = 8 \\ x = \frac{-3}{1} = -3 \end{cases}$$

$$الف) (x-7)(x+2) = 0 \Rightarrow \begin{cases} x = 7 \\ x = -2 \end{cases}$$

$$ب) x^2 + 5x + 4 = 0 \rightarrow (x+5)(x+1) = 0 \Rightarrow \begin{cases} x = -\frac{5}{1} = -5 \\ x = -\frac{1}{1} = -1 \end{cases}$$

$$ج) (x+1)(x+2) = 0 \Rightarrow \begin{cases} x = -1 \\ x = -2 \end{cases}$$

$$د) x = \frac{-3 \pm \sqrt{9 + 24}}{2} \Rightarrow \begin{cases} x = \frac{-3 + \sqrt{33}}{2} \\ x = \frac{-3 - \sqrt{33}}{2} \end{cases}$$

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

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

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

$$الف) m^2 = m + 2 \Rightarrow \begin{cases} m = -1 \\ m = 2 \end{cases} \text{ غلط}$$

$$ب) m^2 = m + 2 \Rightarrow \begin{cases} m = -1 \\ m = 2 \end{cases} \text{ غلط}$$

$$ا) a^2 = 3a - 2 \Rightarrow \begin{cases} a = 1 \\ a = 2 \end{cases} \text{ غلط}$$

$$\begin{cases} a+b=0 \\ x a+b=1 \end{cases}$$

$$\begin{aligned} a &= 1 \\ b &= -1 \end{aligned} \rightarrow a \times b = 1 \times -1 = -1$$

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$$2k - 3 = 5 - 3k$$

$$5k = 8$$

$$k = \frac{8}{5}$$

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الف) $x=1 \rightarrow y^3 - 2y = 0 \rightarrow y(y^2 - 2) = 0 \Rightarrow \begin{cases} y=0 \\ y^2=2 \rightarrow y=\pm\sqrt{2} \end{cases}$ $\times$ تابع نمی باشد

ب) $x=0 \rightarrow |y|=3 \rightarrow y=\pm 3$ $\times$ تابع نمی باشد

ج) $x=90 \rightarrow |y|=1 \rightarrow y=\pm 1$ $\times$ تابع نمی باشد

د) $\begin{cases} y_1^2 + 1 = -x_1^2 - 2x_1 \\ y_2^2 + 1 = -x_2^2 - 2x_2 \end{cases} \xrightarrow{x_1=x_2} y_1^2 + 1 = y_2^2 + 1 \rightarrow y_1 = y_2$ $\checkmark$ تابع می باشد

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الف) $\begin{cases} \sqrt[3]{y_1} = -x_1^2 + 2x_1 - 2 \\ \sqrt[3]{y_2} = -x_2^2 + 2x_2 - 2 \end{cases} \xrightarrow{x_1=x_2} \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$ $\checkmark$

ب) $\begin{cases} y_1^3 + 2y_1 = 5x_1 \\ y_2^3 + 2y_2 = 5x_2 \end{cases} \xrightarrow{x_1=x_2} y_1^3 + 2y_1 = y_2^3 + 2y_2$ $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) + 2(y_1 - y_2) = 0$
 $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 2) = 0 \Rightarrow \begin{cases} y_1 = y_2 \\ y_1^2 + y_1 y_2 + y_2^2 + 2 = 0 \end{cases}$

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الف) $x=0 \rightarrow 0 \times \sin y = y \times \sin 0 \rightarrow 0=0 \rightarrow y$ بی نهایت $\times$ تابع نمی باشد

ب) $\sqrt{\frac{x}{y}} = + \rightarrow + + \frac{1}{+} = 2 \xrightarrow{x=+} + + 1 = 2 \rightarrow + - 2 + 1 = 0 \Rightarrow \frac{1}{+} = 1 \rightarrow \sqrt{\frac{x}{y}} = 1 \rightarrow \frac{x}{y} = 1$

$x=y$ $\checkmark$ تابع می باشد

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