

$$B: \{2, 3\} \quad A: \{1, 2, 3\}$$

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

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

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

1

$$\underline{\underline{m}} \rightarrow m^r = m + 2 \quad \begin{cases} m = +2 \\ m = -1 \end{cases}$$

2

$$ax + b = f(x) \quad 0 < f(x) < 1$$

$$\begin{cases} 2a + b = 1 \\ a + b = 0 \end{cases}$$

$$\underline{\underline{a = 1}}, \quad \underline{\underline{b = -1}}$$

$$x^2 - 1 \leq x < 1$$

$$f(1) = 0 \quad x = 1 \text{ درازی}$$

$$x^2 \leq x \geq 2$$

$$f(2) = 1 \leftarrow x = 2 \text{ درازی}$$

3

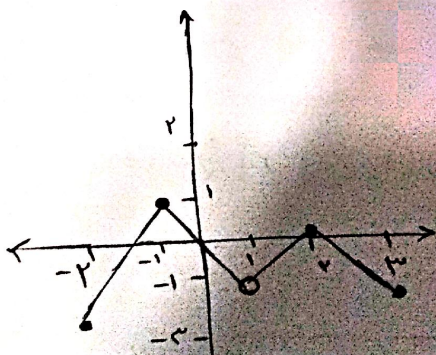
$$x = k \quad \text{در } x_0$$

$$2x - 3 = 4 - 2x$$

$$4x = 7 \quad x = \frac{7}{4}$$

$$\underline{\underline{k = \frac{7}{4}}}$$

4



$$\text{دایره} \rightarrow (-\infty, 1) \cup (1, +\infty)$$

$$\text{مربع} \rightarrow (-\infty, 1] - \{-1\}$$

5

الف) $2y_1^2 + 12 - 2x_1^2 \xrightarrow{x_1 = x_2} 2y_1^2 = 2y_2^2 \leftarrow \text{تایید است}$
 $2y_2^2 + 12 = -2x_2^2$

ب) $(2y - 3)^2 = -(x^2 - 1)^2$

$2y - 3 = -x + 1 \xrightarrow{x_1 = x_2} y_1 = y_2 \leftarrow \text{تایید است}$

الف)

$x \sin y = \frac{x}{0} \sin \frac{x}{0} \xrightarrow{x=0} 0 \sin 0 = 0$

هر عددی می تواند باشد پس تایید است!

ب)

تایید است

الف) $x - 1 = 0 \Rightarrow x = 1$
 $x - 2 = 0 \Rightarrow x = 2$
 $2 - x = 0 \Rightarrow x = 2$
 $x = 0$

$x \mid \begin{array}{c} 1 \quad 2 \\ + \quad - \quad + \end{array} \quad (-\infty, 1] \cup (2, +\infty)$
 $x \mid \begin{array}{c} 0 \quad 2 \\ - \quad + \quad - \end{array} \quad (0, 2]$
 $= (-\infty, 1] \cup (2, +\infty)$

ب) $x \geq 0 \quad [0, +\infty)$

$x - 1 \geq 0 \Rightarrow x \geq 1$

الف) $(x+1)(x-4) \geq 0 \quad x \mid \begin{array}{c} -1 \quad 4 \\ + \quad - \quad + \end{array} \quad (-\infty, -1] \cup [4, +\infty)$

$(x-2)(x-8) \geq 0 \quad x \mid \begin{array}{c} 2 \quad 8 \\ + \quad - \quad + \end{array} \quad (-\infty, 2] \cup [8, +\infty) - \{0\} \xrightarrow{\cap} ((-\infty, -1] \cup [4, +\infty))$

ب) $\frac{(x+1)(x-4)}{(x-2)(x-8)} \geq 0 \quad x \mid \begin{array}{c} -1 \quad 2 \quad 4 \quad 8 \\ + \quad - \quad + \quad - \quad + \end{array} \quad (-\infty, -1] \cup (2, 4] \cup (8, +\infty)$

الف) $(x-1)(2x-5) \geq 0 \Rightarrow x \mid \begin{array}{c} 1 \quad \frac{5}{2} \\ + \quad - \quad + \end{array} \quad (-\infty, 1] \cup [\frac{5}{2}, +\infty)$

$(x-1)(3x-4) \geq 0 \Rightarrow x \mid \begin{array}{c} 1 \quad \frac{4}{3} \\ + \quad - \quad + \end{array} \quad (-\infty, 1] \cup [\frac{4}{3}, +\infty) - \{0\} \xrightarrow{\cap} ((-\infty, 0) \cup [0, 1] \cup [\frac{4}{3}, +\infty))$

ب) $\frac{(x-1)(2x-5)}{(x-1)(3x-4)} \geq 0 \quad x \mid \begin{array}{c} 1 \quad \frac{4}{3} \quad \frac{5}{2} \\ + \quad - \quad + \quad - \quad + \end{array} \quad (-\infty, 1) \cup (1, \frac{4}{3}) \cup [\frac{5}{2}, +\infty)$