

کلاس: یازدهم دختر

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الف) $2x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 32 = 0 \rightarrow (x-9)(x+4) = 0 \rightarrow x_1 = 9 \div 2 \rightarrow x_1 = \frac{9}{2} \rightarrow \boxed{\frac{9}{2}}$
 $x_2 = -4 \div 2 \rightarrow x_2 = -\frac{4}{2} = -2 \rightarrow \boxed{-2}$

ب) $2x^2 - 11x - 9 = 0 \rightarrow x^2 - 11x - 9 = 0 \rightarrow (x-9)(x+1) = 0 \rightarrow x_1 = 9 \div 2 \rightarrow x_1 = \frac{9}{2} \rightarrow \boxed{\frac{9}{2}}$
 $x_2 = -1 \div 2 \rightarrow x_2 = -\frac{1}{2} \rightarrow \boxed{-\frac{1}{2}}$

ج) $4x^2 - 4x - 12 = 0 \rightarrow x^2 - x - 3 = 0 \rightarrow (x-2)(x+1) = 0 \rightarrow x_1 = 2 \div 2 \rightarrow x_1 = 1 \rightarrow \boxed{1}$
 $x_2 = -1 \div 2 \rightarrow x_2 = -\frac{1}{2} \rightarrow \boxed{-\frac{1}{2}}$

د) $2x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 32 = 0 \rightarrow (x-8)(x+4) = 0 \rightarrow x_1 = 8 \div 2 \rightarrow x_1 = 4 \rightarrow \boxed{4}$
 $x_2 = -4 \div 2 \rightarrow x_2 = -2 \rightarrow \boxed{-2}$

الف) $x^2 - 5x - 12 = 0 \rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 25 + 48 \rightarrow \Delta = 73$
 $(x-7)(x+2) = 0 \rightarrow x_1 = 7 \rightarrow \boxed{7}$
 $x_2 = -2 \rightarrow \boxed{-2}$

ب) $2x^2 + 5x + 2 = 0 \rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 25 - 16 \rightarrow \Delta = 9$
 $x^2 + 5x + 2 = 0 \rightarrow (x+2)(x+3) = 0 \rightarrow x_1 = -2 \div 2 \rightarrow x_1 = -1 \rightarrow \boxed{-1}$
 $x_2 = -3 \div 2 \rightarrow x_2 = -\frac{3}{2} \rightarrow \boxed{-\frac{3}{2}}$

ج) $x^2 + 2x + 3 = 0 \rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 4 - 12 \rightarrow \Delta = -8$
 $x_1 = -1 \rightarrow \boxed{-1}$
 $x_2 = -1 \rightarrow \boxed{-1}$

د) $3x^2 + 4x - 5 = 0 \rightarrow \Delta = b^2 - 4ac \rightarrow \Delta = 16 + 60 \rightarrow \Delta = 76$
 $x_{1,2} = \frac{-4 \pm \sqrt{76}}{6}$
 $x_1 = \frac{-4 + \sqrt{76}}{6}$
 $x_2 = \frac{-4 - \sqrt{76}}{6}$

$A = \{1, 2, 3\}$ و $B = \{2, 3, 4\}$ $A \times B - B^c = ?$
 $A \times B = \{(1,2), (1,3), (1,4), (2,2), (2,3), (2,4), (3,2), (3,3), (3,4)\}$
 $B^c = B \times B = \{(2,2), (2,3), (2,4), (3,2), (3,3), (3,4)\}$
 $A \times B - B^c = \{(1,2), (1,3), (1,4)\}$

الف) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0 \rightarrow m_1 = 2 \rightarrow m_2 = -1$
 $m = 2 \Rightarrow (2, 4)$ و $(2, 1)$
 $m = -1 \Rightarrow (-1, 4)$ و $(-1, 1)$

ب) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0 \rightarrow m_1 = 2 \rightarrow m_2 = -1$
 $m = 2 \Rightarrow (2, 4)$ و $(2, 1)$
 $m = -1 \Rightarrow (-1, 4)$ و $(-1, 1)$

$a^2 = 4a - 2 \rightarrow a^2 - 4a + 2 = 0 \rightarrow (a-1)(a-3) = 0 \rightarrow a_1 = 1 \rightarrow a_2 = 3$
 $a = 1 \Rightarrow (1, 1)$ و $(1, 3)$
 $a = 3 \Rightarrow (3, 1)$ و $(3, 3)$

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

$$\begin{aligned} 1^2 - 1 &= a + b \rightarrow a + b = 0 \rightarrow b = -a \\ 2^2 &= 2a + b \rightarrow 1 = 2a + b \rightarrow a = 1 \\ a \times b &= 1 \times -1 = -1 \end{aligned}$$

جواب : -1

$$2k - 3 = 4 - 4k \rightarrow 6k = 7 \rightarrow k = \frac{7}{6}$$

جواب : 7/6

$$\begin{aligned} y^4 - 2y &= x^5 - 2x + 3 \rightarrow x = 1 \rightarrow y^4 - 2y = 0 \rightarrow y(y^3 - 2) = 0 \\ y &= 0 \quad y = \sqrt[3]{2} \end{aligned}$$

به ازای یک x یکتا داریم پس تابع نیست

جواب : X

$$|x| + |y| = 3 \rightarrow x = 0 \rightarrow |y| = 3 \rightarrow y = \pm 3$$

تابع نیست X

جواب :

$$|y| = \sqrt{1 - \cos x} \rightarrow \cos x = -1 \rightarrow x = 180^\circ$$

$$|y| = \sqrt{2} \rightarrow y = \pm \sqrt{2}$$

تابع نیست X

جواب :

$$y^2 + x^2 + 2x + 1 = 0 \rightarrow y^2 = -(x^2 + 2x + 1) \rightarrow y^2 = -(x + 1)^2$$

$$x = -1 \quad y = 0$$

نقطه یکتا یک چیز نیست ، متغیرها نیستند
هر دو با یکدیگر متغیر باشند

پس یک نقطه است = تابع است ✓

$$\sqrt[3]{y_1} + x_1^2 = 2x_1 - 2 \quad \sqrt[3]{y_2} + x_2^2 = 2x_2 - 2 \rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$$

تابع است ✓

$$y^3 + 2y = \Delta x$$

$$\begin{aligned} y_1^3 + 2y_1 &= \Delta x_1 \\ y_2^3 + 2y_2 &= \Delta x_2 \end{aligned} \rightarrow y_1^3 + 2y_1 = y_2^3 + 2y_2$$

$$y_1^3 - y_2^3 = 2y_2 - 2y_1 \rightarrow (y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2) = -2(y_1 - y_2) \rightarrow (y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2 + 2) = 0$$

$$y_1 = y_2$$

$$\Delta = y_2^2 - 2y_2 - 1 \rightarrow \Delta < 0$$

پس این متغیرها
با این متغیرها
تابع است ✓

$$x \sin y = y \sin x \rightarrow x = 0 \rightarrow 0 = 0$$

پس هر مقدار که
می گذارند درست است

تابع نیست X

$$\frac{\sqrt{x}}{t} + \frac{\sqrt{y}}{t} = 2 \rightarrow t + \frac{1}{t} = 2 \rightarrow t^2 - 2t + 1 = 0 \rightarrow (t - 1)^2 = 0 \rightarrow t = 1$$

$$\frac{\sqrt{x}}{y} = 1 \rightarrow \frac{x}{y} = 1 \rightarrow x = y$$

تابع است ✓

جواب :