

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: ریاضی

۲- آفین ضعیف نامی نیست!

الف) $6x^2 - 5x - 6 = 0 \rightarrow x^2 - 5x - 34 = 0 \rightarrow (x-9)(x+4) \rightarrow x_1 = 9, x_2 = -4$

ب) $3x^2 - 8x - 3 = 0 \rightarrow x^2 - 8x - 9 = 0 \rightarrow (x+1)(x-9) \rightarrow x_1 = -1, x_2 = 9$

ج) $4x^2 - 4x - 3 = 0 \rightarrow x^2 - 4x - 12 = 0 \rightarrow (x-4)(x+3) \rightarrow x_1 = 4, x_2 = -3$

د) $2x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 24 = 0 \rightarrow (x-8)(x+3) \rightarrow x_1 = 8, x_2 = -3$

الف) $x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) \rightarrow x_1 = 7, x_2 = -2$

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

ج) $x^2 + 2x + 3 = 0 \rightarrow \Delta = 4 - 4(1)(3) \rightarrow \Delta < 0$ ریشه ندارد.

د) $3x^2 + 3x - 2 = 0 \rightarrow \Delta = 9 - 4(3)(-2) \rightarrow 9 + 24 = 33 \rightarrow \frac{-3 \pm \sqrt{33}}{6} \rightarrow x_1 = \frac{-3 + \sqrt{33}}{6}, x_2 = \frac{-3 - \sqrt{33}}{6}$

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

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

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

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

الف) $f(x) = \{(3, m^2), (2, 1), (-3, m), (-2, m), (3, m+2), (m, 4)\}$

ب) $g(x) = \{(3, m^2), (2, 1), (m, 4), (3, m+2), (-2, m), (-1, 3)\}$

$m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) \rightarrow m = 2, m = -1$

برای هیچ مقدری تابع نیست!

$f(x) = \{(1, a^2), (1, 3a-2), (a^2, 3a+2)\}$

$a^2 = 3a - 2 \rightarrow a^2 - 3a + 2 = 0 \rightarrow (a-1)(a-2) \rightarrow a = 1, a = 2$

$a = 1 \rightarrow \{(1, 1), (1, 1), (1, 5)\}$

$a = 2 \rightarrow \{(1, 4), (1, 4), (4, 8)\}$

$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ ax + b & 1 \leq x \leq 2 \\ x^3 & x \geq 2 \end{cases}$	$\begin{aligned} \lambda = 1 &\rightarrow x^2 - 1 \rightarrow 1 - 1 = 0 \rightarrow a + b = 0 \xrightarrow{b^2 - 4a} \overline{a = 1} \\ \lambda = 1 &\rightarrow ax + b \rightarrow a + b \\ \lambda = 2 &\rightarrow ax + b \rightarrow 2a + b \\ \lambda = 2 &\rightarrow x^3 \rightarrow 8 \end{aligned} \rightarrow \begin{cases} a + b = 0 \\ 2a + b = 8 \end{cases}$ $x(2) \begin{cases} a + b = 0 \\ 2a + b = 8 \end{cases} \rightarrow \begin{cases} -a - 2b = 0 \\ 2a + b = 8 \end{cases} \rightarrow \begin{cases} -b = 8 \\ b = -8 \end{cases}$ $a + b = -4 \quad \boxed{a, b = -4}$
$f(x) = \begin{cases} 2x - 3 & x \geq k \\ 4 - 3x & x \leq k \end{cases}$	$2k - 3 = 4 - 3k \rightarrow 5k = 7 \rightarrow k = \frac{7}{5}$
الف) $y^3 - 6y = x^2 - 4x + 3$! تابع نیست $y^3 - 6y$ ب) $x + y = 3 \rightarrow x = 0 \rightarrow y = 3 \rightarrow y = \pm 3$ تابع نیست $x + y$ ج) $y = \sqrt{1 - \cos x} \rightarrow x = 0 \rightarrow \sqrt{1 - \cos 0} \rightarrow \sqrt{1 - 1} = 0 \rightarrow y = 0 \rightarrow y = 0$ تابع نیست y د) $y^2 + x^2 + 2x + 1 = 0 \rightarrow y^2 + (x+1)^2 = 0 \rightarrow (-1, 0)$ تابع نیست $y^2 + (x+1)^2$	
الف) $\sqrt[3]{y} + x^2 = 2x - 2$ ب) $y^3 + 2y = 5x$	الف) $\sqrt[3]{y} + x^2 = 2x - 2 \rightarrow \sqrt[3]{y} = 2x - 2 - x^2 \rightarrow y = (2x - 2 - x^2)^3$ تابع است $\sqrt[3]{y}$ ب) $y^3 + 2y = 5x \rightarrow y^3 + 2y = 5x \rightarrow y^3 + 2y = 5x \rightarrow y^3 + 2y = 5x$ تابع است $y^3 + 2y$
الف) $x \sin y = y \sin x \rightarrow x = 0 \rightarrow \sin y = 0 \rightarrow y = 0$ تابع نیست $x \sin y$ ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$	الف) $x \sin y = y \sin x \rightarrow x = 0 \rightarrow \sin y = 0 \rightarrow y = 0$ تابع نیست $x \sin y$ ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \rightarrow \sqrt{\frac{x}{y}} = 2 - \sqrt{\frac{y}{x}} \rightarrow \frac{x}{y} = (2 - \sqrt{\frac{y}{x}})^2$ تابع است $\sqrt{\frac{x}{y}}$