آزمون شناسایی اردیبهشت

Subject :
Year: Month: Day:

۱) الف) $\begin{cases} 3x - y = 9 \\ x + 2y = -4 \end{cases} \Rightarrow 7x = 14 \Rightarrow \begin{cases} x = 2 \\ y = -3 \end{cases} \Rightarrow \frac{x}{y} = \frac{-2}{3}$

ب) $\frac{y-x}{xy} = -1 \Rightarrow y - x = -xy \Rightarrow x - y = xy$

$\frac{5y - 7x}{xy} = -3 \Rightarrow 7x - 5y = 3xy$

$\Rightarrow 3x - 3y = 7x - 5y$

$\Rightarrow 4x = 2y$

$2x = y \Rightarrow \frac{x}{y} = \frac{1}{2}$

۲) $a + 1 = -2$

$\Rightarrow a = -3$

$2f(1) = -6 = 2f(x) + b - 6 \Rightarrow f(x) \boxed{b = 0}$

۳) $m^2 - 3m = -2 \Rightarrow m^2 - 3m + 2 \begin{cases} m = 1 \Rightarrow f(x) \text{ غیر ثابت} \\ m = 2 \Rightarrow f(x) \text{ ثابت} \end{cases}$

هیچ مقدار

۴) الف) ✗ ب) ✗ ج) ✓

۵) الف) $y = -\sqrt{x+1} \Rightarrow y_1^2 = x + 1 \Rightarrow \begin{cases} y_1 \leq 0 \\ y_2 \leq 0 \\ y_1^2 = y_2^2 \end{cases} \Rightarrow y_1 = y_2$ ✓

زیرا دو عدد نامنفی است

ب) $x = \frac{y}{\sqrt{1-y^2}} \Rightarrow x^2 = 1 \Rightarrow y^2 = 1 - y^2$ ✗

$\Rightarrow 2y^2 = 1 \Rightarrow y^2 = \frac{1}{2} \Rightarrow y = \pm\frac{\sqrt{2}}{2}$ تابع نیست

$y, (A)^2 = 4$

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۶) الف) $|y| = x \Rightarrow x = 1 \Rightarrow y = \pm 1$ × تابع نیست

ب) $y^3 + 3y^2 + 3y = -x^3 - x \Rightarrow y(\underbrace{y^2 + 3y + 3}_{\text{همواره مثبت}})^{A} = -x(\underbrace{x^2 + 1}_{\text{همواره مثبت}})^{B} \Rightarrow \frac{B}{A} \rightarrow +$

$\Rightarrow (y+1)^3 = -x^3 - x + 1 \Rightarrow$

$y = \sqrt[3]{1 - x^3 - x} - 1$ ✓ تابع است

۷) $\frac{(x+2)^2 + 1}{(x+2)^2 + 3} = \frac{(\sqrt{3})^2 + 1}{(\sqrt{3})^2 + 3} = \frac{4}{6} = \frac{2}{3}$

۸)

$y = 3x - a$

$-4 = -3 - a \Rightarrow a = 1$

$3x - 1 = x^3 + x + b$

$-4 = -1 - 1 + b \Rightarrow b = -2$

$3x - 1 = x^3 + x - 2 \Rightarrow x^3 - 2x - 1 = 0$

$x^3 - x - x - 1 = 0 \Rightarrow (x^3 - x^2)(x+1) - (x+1)$

$= (x+1)(x^2 - x - 1) = 0$

$-1 \qquad x = \frac{1 \pm \sqrt{5}}{2} \Rightarrow \frac{1 + \sqrt{5}}{2}, \frac{1 - \sqrt{5}}{2}, \frac{1+2}{2}$

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$a+b=2a \Rightarrow a=b$

$\Rightarrow 2a=-a+1 \Rightarrow 3a=1 \Rightarrow a=\frac{1}{3}$ (9

$\frac{4x^2-9x+C+1}{bx+3} = x$ (10

$4x^2-9x+C+1 = bx^2+3x \Rightarrow b=4$

$a=-3$

$C=-1$

$\therefore 4-4=0$