

مقطع: دهم پسران
نام: ایریسین ماروقیان
شماره تلفن: ۱

سوال ۱

- الف) $f(x) = \sqrt{x|x|}$, $g(x) = x$ $\begin{cases} D_f =]-\infty; +\infty[\\ D_g = \mathbb{R} \end{cases} \Rightarrow$ برابر نیستند
- ب) $f(x) = \frac{(x+3)(x+1)+x+4}{x^2+5x+6}$, $g(x) = 1$ $\begin{cases} D_f = \mathbb{R} \\ D_g = \mathbb{R} \end{cases}$ $\Rightarrow$ ضابطه برابر ندارند $f(0) = \frac{4}{6} \neq g(0) = 1$
- ج) $f(x) = \frac{x \sin^2 x - 5 \sin x}{x \sin x - 3}$, $g(x) = x \sin x$ $\begin{cases} D_f = \mathbb{R} - \{ \frac{\pi}{2} \} \\ D_g = \mathbb{R} \end{cases} \Rightarrow$ برابر نیستند
- د) $f(x) = \frac{x}{|x|}$, $g(x) = \frac{|x|}{x}$ $\begin{cases} D_f = \mathbb{R} - \{0\} \\ D_g = \mathbb{R} - \{0\} \end{cases}$ $\Rightarrow$ ضابطه‌ی و برابر دارند $f(-2) = -1 = g(-2) = -1 \checkmark$

سوال ۲

- الف) $f(x) = \left[\frac{x^2}{x^2+1} \right]$, $g(x) = [x - [x]]$ $\begin{cases} f(-1/2) = 0 \\ g(-1/2) = -2 \end{cases} \Rightarrow$ دامنه برابر ندارند
- ب) $f(x) = \frac{1}{[x]}$, $g(x) = \frac{1}{x}$ $\begin{cases} f(1/2) = 1 \\ g(1/2) = 2 \end{cases} \Rightarrow$ برابر نیستند
- ج) $f(x) = \frac{1}{\sqrt{x-1}}$, $g(x) = \frac{1}{\sqrt{|x|-1}}$ $\begin{cases} D_f = (1; +\infty) \\ D_g = (-\infty; 0) \end{cases} \Rightarrow$ برابر نیستند
- د) $f(x) = \begin{cases} \frac{x^3-x}{x-1} & ; x \neq 1 \\ 2 & ; x = 1 \end{cases}$, $g(x) = x^2+x$ $\Rightarrow$ برابر هستند $D_f = D_g \checkmark$
- $f(-3) = \frac{-27+3}{-4} = 6$, $g(-3) = 9-3 = 6$
- $f(1) = g(1) \checkmark$

سوال ۳

$$f(x) + g(x) = x^2 + x + 1 \Rightarrow x f(x) = x(x^2 + 1)$$

$$f(x) - g(x) = x^2 - x + 1$$

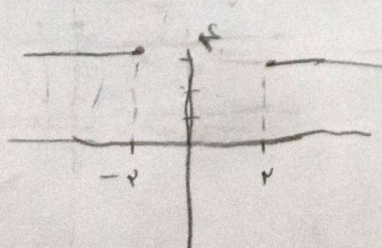
$$g(x) = x^2 + x + 1 - x^2 + x - 1 \Rightarrow g(x) = x$$

$$f^2(x) - g^2(x) = (f(x) - g(x))(f(x) + g(x))$$

$$= (x^2 - x + 1)(x^2 + x + 1) = x^4 + x^3 + x^2 - x^3 - x^2 - x + x^2 + x + 1$$

$$= \boxed{x^4 + x^2 + 1}$$

سوال ۴

$$(x + \sqrt{x^2-4})(x - \sqrt{x^2-4}) = x^2 - (x^2-4) = 4$$


تعیین علامت: $\frac{-2}{+} \frac{2}{-}$

$$D = (-\infty; -2] \cup [2; +\infty)$$

سوال 8

$$\frac{x-b}{x^2-4x-2} = \frac{r(ax+b)}{x^2-4x-2}$$

$$\rightarrow -4m = -w \Rightarrow m = \frac{w}{4}$$

$$\rightarrow rn = -2 \Rightarrow n = -\frac{2}{r}$$

$$\rightarrow ra = 1 \Rightarrow a = \frac{1}{r}$$

$$\rightarrow -b = -2 \Rightarrow b = 2$$

$$am - bn = \frac{w}{4} - 10 = \frac{-wv}{4}$$

سوال 6

$$\frac{bx+2}{ax+b} = c$$

$$bx+2 = c(ax+b)$$

$$\rightarrow ax + 2 \neq 0 \Rightarrow a \neq -\frac{2}{x}$$

$$\Rightarrow \wedge c = \frac{2}{x} \Rightarrow \wedge \frac{2}{x} = c \Rightarrow c = \frac{1}{x} \Rightarrow c = \frac{1}{x}$$

$$\Rightarrow b = 2 \Rightarrow b = 2$$

$$\frac{-\frac{1}{x} \times 2}{\frac{1}{x}} = -2 \Rightarrow \frac{ab}{c} = 'R - \{-\frac{1}{x}\}$$

$$\frac{r_5}{4+5} = \frac{\{(2,1) \text{ و } (3,1) \text{ و } (-1,1) \text{ و } (0,0)\}}{\{(-1, -\frac{1}{4}) \text{ و } (2, \frac{1}{4}) \text{ و } (3, \frac{1}{4})\}}$$

$$\rightarrow \text{بر دین تابع} = \{\frac{1}{4}, \frac{2}{5}, \frac{1}{4}\}$$

سوال 7

$$f = \{(-1, \frac{1}{4}) \text{ و } (2, \frac{1}{4}) \text{ و } (3, -\frac{1}{4}) \text{ و } (0, -1)\}$$

$$\alpha = \alpha \Rightarrow \alpha = -1 \text{ و } \alpha = -1$$

$$a - 2b = -1 \Rightarrow -2b = -1 \Rightarrow b = \frac{1}{2}$$

$$a - 2b = c \Rightarrow -1 + 1 = c \Rightarrow c = 0$$

$$\Rightarrow \alpha + c = 1$$

سوال 1

$$0 = \sqrt{-n^2 + n - m}$$

$$0 = -(n^2 - n + m)$$

به تنهایی نقطه می تواند باشد

$$\Delta = 0 \quad 1 - 4m = 0 \quad m = \frac{1}{4}$$

سوال 9

$$a = \frac{1}{r} \quad b = 0 \quad \left(a + b = \frac{1}{r} \right)$$

$$\left(n + \frac{1}{r} \right)^2 = 0 \quad \left[n = -\frac{1}{r} \right]$$

سوال 10

$$\frac{rx+a}{x^2+5x+b} = \frac{r(x+c)}{(x-c)^2} \rightarrow x^2 + 5x + b = x^2 - 2cx + c^2$$

$$\rightarrow -2c = 5 \Rightarrow c = -\frac{5}{2}$$

$$\rightarrow c^2 = b \Rightarrow b = \frac{25}{4}$$

$$\frac{rx+a}{9} = \frac{r}{w} \Rightarrow a = \frac{r}{w}$$

$$a + b + c = \frac{r}{w} + \frac{25}{4} - \frac{5}{2} = 12$$