

الف) $D_f = \mathbb{R}^+$ $D_g = \mathbb{R}$ برابر نیستند

ب) $x^2 + 5x + 7 \neq 0$ $D_f = \mathbb{R}$ $D_g = \mathbb{R}$

$$x^2 + 5x + 7 = x^2 + 4x + 3 + x + 4 = (x+1)(x+3) + x + 4$$

برابر هستند.

الف) $[x - [x]] \Rightarrow D_g = \mathbb{R}$ | $\left(\frac{x^2}{x^2+1} \right) D_f = \mathbb{R}$ مساوی هستند
 [0,1) هلاله برابر ۰ | [0,1) هلاله برابر ۰

ب) $[2x] = 0$ $0 \leq 2x < 1$ $0 \leq x < 0.5$ $D_f = \mathbb{R} - [0.5, 1)$

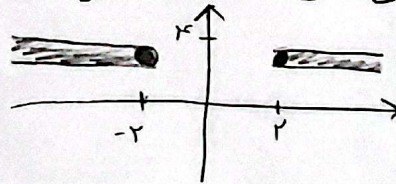
$2[x] = 0 \Rightarrow [x] = 0$ $0 \leq x < 1$ $D_g = \mathbb{R} - [0, 1)$ برابر نیستند

$$\begin{cases} f(x) - g(x) = x^2 - x + 1 \\ f(x) + g(x) = x^2 + x + 1 \end{cases} \Rightarrow \begin{aligned} 2f(x) &= 2x^2 + 2 \Rightarrow f(x) = x^2 + 1 \\ 2g(x) &= 2x \Rightarrow g(x) = x \end{aligned}$$

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

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

$$D_f = D_g = (-\infty, -2] \cup [2, \infty)$$



$$\frac{x-b}{2x^2-3x-5} \times \frac{1}{x} = \frac{\frac{x}{x} - \frac{b}{x}}{x^2-1.5x-2.5} = \frac{ax+b}{x^2-mx+n} \Rightarrow \begin{cases} a = \frac{1}{x} \\ b = -\frac{b}{x} \\ m = 1.5 \\ n = -2.5 \end{cases}$$

$$am - bn = \left(\frac{1}{x} \times 1.5\right) - \left(-\frac{b}{x} - 2.5\right) = 0.75 - 1.0 = -0.25$$

$$D_f = D_g = \mathbb{R} - \{a\}$$

$$c = \frac{bn+1}{1n+b} \Rightarrow 1cn+cb = bn+1$$

$$b = 1c = \frac{1}{c} \Rightarrow c^2 = \frac{1}{b} \Rightarrow c = \pm \frac{1}{\sqrt{b}} \quad \begin{matrix} 1c=b, & b=\frac{1}{c} \\ b=1c \Rightarrow & b=-1 \end{matrix}$$

$$\rightarrow 1a+1 \neq 0 \Rightarrow a = -1$$

$$\rightarrow 1a-1 \neq 0 \Rightarrow a = 1$$

$$\frac{ab}{c} = \frac{-1 \times (-1)}{-1} = -1$$

$$\frac{ab}{c} = \frac{1 \times (1)}{1} = 1$$

$$f = \{(-1, 1), (1, 1), (1, -1), (0, 0/0)\}$$

$$g = \{(1, 1), (1, 1), (-1, -1), (0, 0)\}$$

$$\frac{fg}{f+g} = \left\{ \left(1, \frac{1}{1} \right), \left(1, \frac{1}{1} \right), \left(-1, \frac{-1}{-1} \right) \right\}$$

$$R_{\frac{fg}{f+g}} = \{1, 1, 1\}$$

$$a = d = -1$$

$$3a - 2b = 1$$

$$3 \times (-1) - 2b = 1$$

$$-3 - 1 = 2b \Rightarrow b = -2$$

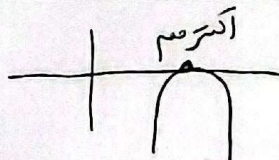
$$a - 3b = c$$

$$(-1) - 3(-2) = c \Rightarrow c = 5$$

$$d + c = -1 + 5 = 4$$

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

فاكسيم دار



y نقطه اكثر هم 0 است
زيرا دائره تنها 1 عدد دارد.

$$x = \frac{-b'}{2a'} = \frac{-1}{-2} = \frac{1}{2}$$

$$\text{نقطه اكثر هم} = \left[\frac{1}{2} \right] \quad a+b = \frac{1}{2}$$

$$g(x) = \frac{1}{x-c}$$

$$x \neq c \quad \text{فقط يك شرايط}$$

$$x^2 + 4x + b = 0$$

$$\Delta = 0 \quad \Delta = 16 - 4b \Rightarrow 16 - 4b = 0 \Rightarrow 4b = 16 \Rightarrow b = 4$$

$$\frac{1x+a}{(x+3)^2} = \frac{1x+a}{(x-c)^2} \Rightarrow c = -3 \quad \frac{1}{x-(-3)} = \frac{1x+a}{(x+3)^2}$$

$$1(x+3) = 1x+a \Rightarrow 1x+3 = 1x+a \Rightarrow a = 3$$

$$a+b+c = 3+4-3 = 4$$

سوال ۱ - قسمت «ج» و «د» :

ج) $D_g = \mathbb{R}$

$D_f = \mathbb{R}$

$2 \sin x - 3 \neq 0$

$2 \sin x \neq 3 \quad \sin x \neq \frac{3}{2}$

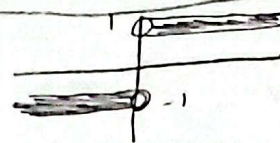
$$\frac{2 \sin^2 x - 3 \sin x}{2 \sin x - 3} = \frac{2 \sin x (2 \sin x - 3)}{2 \sin x - 3} = 2 \sin x$$

دانه و ضابطه برابر هستند پس مساوی هستند.

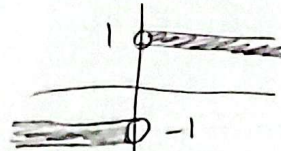
> $D_f = \mathbb{R} - \{0\}$

$D_g = \mathbb{R} - \{0\}$

$\frac{x}{|x|} \Rightarrow$



$\frac{|x|}{x} \Rightarrow$



دانه و ضابطه برابرند
پس مساوی اند

سوال ۲ - قسمت «ج» و «د» :

ج) $x - |x| \geq 0 \quad x \geq |x| \Rightarrow x \geq 0 \quad D_f = [0, \infty)$

$|x| - x \geq 0 \quad |x| \geq x \Rightarrow D_g = \mathbb{R}$ برقرار نیست

> $D_f = \mathbb{R}$

$D_g = \mathbb{R}$

$$\frac{x^3 - x}{x - 1} = \frac{x(x^2 - 1)}{x - 1} = \frac{x(x-1)(x+1)}{x-1} =$$

$x^2 + 1$

دانه ها و ضابطه ها برابر هستند.

پس مساوی هستند.