

$$f(x) = g(x) \Rightarrow D_f = D_g, \quad D_f = R - \left\{ -\frac{b}{a} \right\}, \quad D_g = R - \{a\}$$

$$R - \left\{ -\frac{b}{a} \right\} = R - \{a\} \Rightarrow a = -\frac{b}{a} \quad \downarrow$$

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

$$\frac{bx+a}{ax+b} = c \Rightarrow \underline{acx+bc = b_2x+a}$$

$$\Rightarrow bx + b \times \frac{b}{a} = bx + b \Rightarrow \frac{b}{a} = b \Rightarrow \frac{ab}{c} = -\frac{b}{a} \times b = -\frac{b^2}{a}$$

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

$$f^{-1} = \{(-1, x), (x, y), (x, -a), (0, 0)\}$$

$$f = \{(-1, y), (x, x), (x, -y), (0, \frac{1}{y})\}$$

$$\frac{y}{f+g} = \frac{\{(x, 1), (x, 1), (-1, -1), (0, 0)\}}{\{(x, x), (x, x), (-1, -y)\}} = \{(-1, \frac{1}{x}), (x, \frac{1}{x}), (-1, -y)\}$$

$$f \neq g \Rightarrow (x, -1) = (x, a) = (x, a) \Rightarrow a = a = -1$$

$$(-x, 1) = (-x, xa - yb) \Rightarrow 1 = xa - yb = -x - yb \Rightarrow b = -x$$

$$(a - xb, a) = (c, c) \Rightarrow \begin{matrix} a - xb \\ -1 \end{matrix} = c = c$$

$$a + c = -1 + a = x$$

$$-x^y + x - m > 0$$

چون $g(x)$ نقطه یک زوج دارد و نقطه یک فرد ندارد
و چون $f(x)$ یک تابع باغور است هم ما لیسیم دار است
بسی باید نقطه یک داشته باشد $\Leftarrow$ دلای آن برای هفت است

$$f(x) = \frac{-1 \pm \sqrt{1-4m}}{-y} = \frac{-1 \pm \sqrt{0}}{-y} = \frac{-1 \pm 0}{-y} \Rightarrow 1 - 4m = 0 \Rightarrow m = \frac{1}{4}$$

$$-x^y + x - m = -x^y + x - \frac{1}{4} = -\left(x + \frac{1}{x}\right)^y \Rightarrow x = \frac{1}{x}$$

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

$$g(x) = \frac{y}{x-c}, \quad f(x) = \frac{yx+a}{x^y+cx+b} \quad g(x) = f(x)$$

$$g(x) = f(x) \Rightarrow \text{دای یک نشانه} \Rightarrow x^y + cx + b = \frac{yx+a}{x-c}$$

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$$Dg = R - \{c\}, Df = Dg \text{ 'ی' } \Delta = 0$$

$$\frac{y}{x-c} = \frac{y}{x+c} = \frac{yx+a}{x^y+cx+a} = \frac{yx+a}{(x+x)^y}$$

$$\Rightarrow \frac{yx+a}{x^y+cx+a} = \frac{yx+a}{(x+x)^y} \Rightarrow \frac{yx+a}{x^y+cx+a} = \frac{yx+a}{(x+x)^y}$$

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الف) $f(x) = \sqrt{x|x|} \Rightarrow D_f = [0, +\infty)$ $g(x) = x \Rightarrow D_g = \mathbb{R}$ $D_g \neq D_f \Rightarrow$ نابرابی

ب) $D_g = D_f = \mathbb{R}$ $f(x) = x^2 + 4x + 3 + x + 4$ $g(x) = 1$ $\frac{x^2 + 4x + 3 + x + 4}{x^2 + 4x + 3} = 1$ $\Rightarrow$ دو تابع مساوی اند

ج) $D_f = D_g = \mathbb{R}$ $f(x) = 4 \sin^2 x - 4 \sin x = \frac{4 \sin^2 x - 4 \sin x}{4 \sin x - 4} = \frac{4 \sin x (\sin x - 1)}{4 \sin x - 4} = \frac{4 \sin x (\sin x - 1)}{4 (\sin x - 1)} = \sin x$ $\Rightarrow$ دو تابع برابرند

د) $D_g = D_f = \mathbb{R} - \{0\}$ $f(x) = \frac{x}{|x|} = \pm 1$ $g(x) = \frac{|x|}{x} = \pm 1$ $\Rightarrow$ دو تابع برابرند

الف) $D_f = D_g = \mathbb{R}$ $f(x) = \left[\frac{x^2}{x^2 + 1} \right] = 0$ $g(x) = [x - [x]] = 0$ $\Rightarrow$ دو تابع برابرند

ب) $D_f = \mathbb{R} - [0, \frac{1}{2})$ $D_g = \mathbb{R} - [0, 1)$ $D_f \neq D_g \Rightarrow$ نابرابی

ج) $x - |x| > 0 \Rightarrow D_f = \emptyset$ $0 < |x| - x \Rightarrow D_g = (-\infty, 0)$ $D_f \neq D_g \Rightarrow$ نابرابی

د) $D_f = D_g$ $f(x) = \frac{x^3 - x}{x - 1} = \frac{x(x^2 - 1)}{x - 1} = \frac{x(x+1)(x-1)}{x-1} = x^2 + x$ $\Rightarrow$ دو تابع برابرند

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

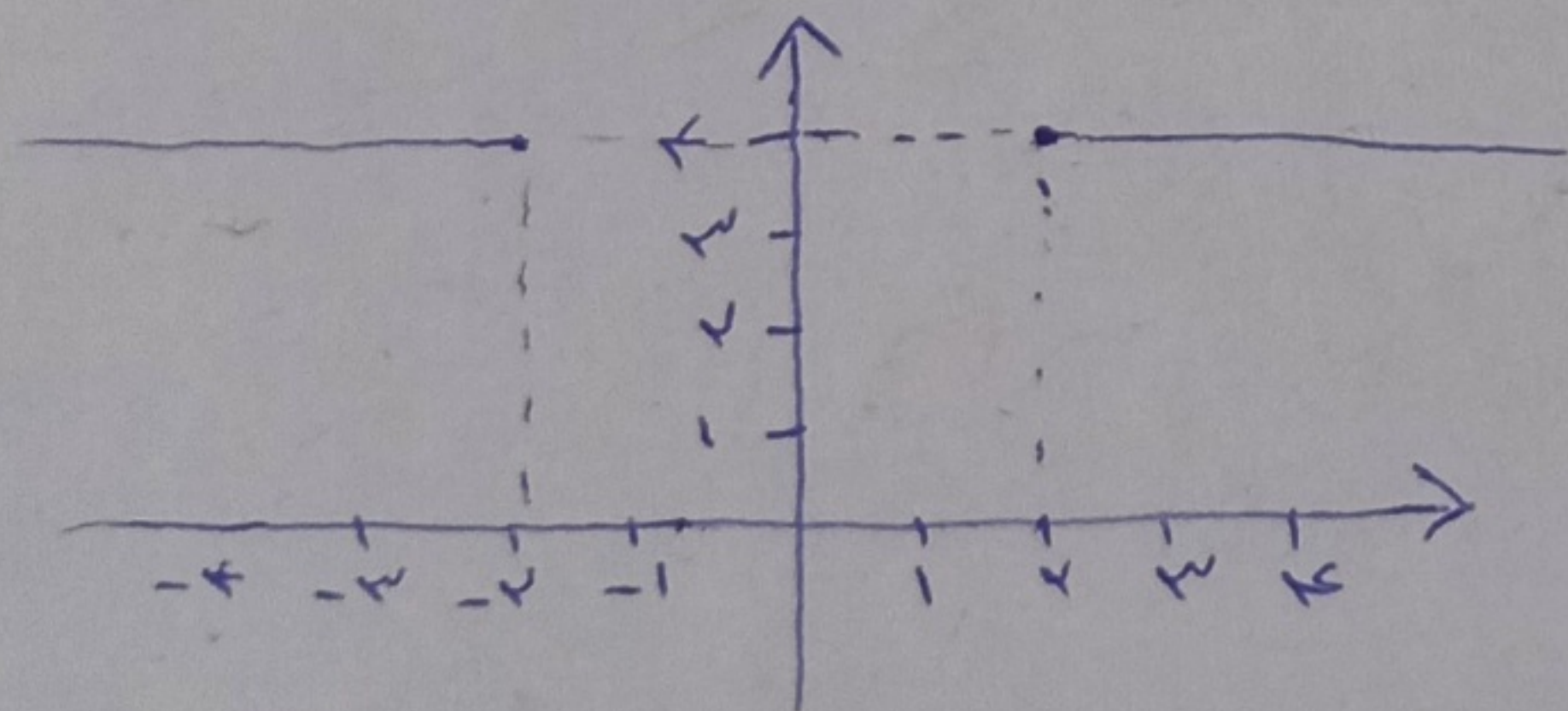
$f(x) + g(x) + f(x) - g(x) = x^2 + x + 1 + x^2 - x + 1 = 2x^2 + 2 \Rightarrow f(x) = x^2 + 1$

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

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

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

$D_{f \times g} = (-\infty, -2] \cup [2, +\infty)$



x و y = $\frac{-(-3) \pm \sqrt{4a}}{4} = \frac{3 \pm \sqrt{4a}}{4} = -1$ و $\frac{10}{4} = 2.5$ $\Rightarrow$ $f(x) = g(x)$

$x^2 - mx + n = (x+1)(x-2.5) = x^2 - 1.5x - 2.5 \Rightarrow m = 1.5$ و $n = -2.5$

$\frac{x-b}{x^2 - 1.5x - 2.5} = \frac{ax + y}{x^2 - 1.5x - 2.5} \Rightarrow \boxed{a = \frac{1}{2.5}}$ و $-b = 2.5 \times 2.5 = 6.25 \Rightarrow \boxed{b = -6.25}$

$am - bn = \frac{1}{2.5} \times \frac{3}{4} - (-6.25) \times (-2.5) = \frac{3}{10} - 15.625 = -15.325$