

الف) $g(x) = \sqrt{x|x|}$ برای سنجی هم‌تدریس نشود

ب) $\frac{x^2 + 2x + 2 + x + 2}{x^2 + 2x + 2} = 1$

ج) $\frac{x^2 \sin^2 x - 4 \sin x}{x^2 \sin x - 2} = x \sin x$

د) $\frac{x^2}{|x|} = \frac{|x|}{x}$

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الف) $\left[\frac{x^2}{x^2+1} \right] = \left[\frac{x-x^3}{x^2+1} \right]$ همواره ۰

ب) $f(x)g(x) = \frac{1}{x^2+1}$

ج) $f(x) = \{ \}$

د) $x^2 + x = 2, x = 1$

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

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

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

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

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$x - \sqrt{x^2 - 2} = x + \sqrt{x^2 - 2} \Rightarrow 2\sqrt{x^2 - 2} = 0 \Rightarrow x^2 - 2 = 0 \Rightarrow x^2 = 2 \Rightarrow x = \pm \sqrt{2}$

$f(x) = x, g(x) = x, f(-x) = -x, g(-x) = -x$

$f \times g = \{(x, x), (-x, -x)\}$

$D_f = \mathbb{R} - (-\sqrt{2}, \sqrt{2})$

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$\frac{ax+b}{x^2+mx+n} = \frac{x-2}{x^2-2x-3} \Rightarrow x^2 - mx + x = (x^2 - 2x - 3) \Rightarrow x^2 - mx + x = x^2 - 2x - 3$

$\Rightarrow m = 3, n = -3$

$a = \frac{1}{3}, b = -3$

$m = \frac{p}{r}, n = -\frac{q}{r}$

$am - bn = \frac{p}{r} - (-3) = \frac{p}{r} + 3$

۵

$$1x + b \neq 0 \quad c \neq 0 \quad \frac{bx+r}{1x+b} = c \rightarrow bx+r = 1cx + cb$$

$$x = \frac{b}{1} \quad a = \frac{-b}{1}$$

$$\begin{cases} b = 1c \\ bc = r \end{cases} \rightarrow \begin{cases} c = \pm \frac{1}{r} \\ b = \pm 1 \\ a = \pm \frac{1}{r} \end{cases}$$

$a, b, c \in \mathbb{R}, c \neq 0$
 $\frac{ab}{c} = \pm 1$

o

$$\frac{rg}{f+g} = \{(1,1), (-1,1), (1,1)\} \Rightarrow R_{\frac{rg}{f+g}} = \{1, 1, 1\}$$

v

$$d = a = -1 \quad c = a - rb \Rightarrow c = d$$

$$ra - rb = 1$$

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

$c + d = -1 - 1 = -2$

Λ

$$-x^r + x - m \geq 0 \Rightarrow x^r - x + m \leq 0 \quad \Delta = 1 - 4m$$

$$\Delta = 0 \Rightarrow m = \frac{1}{4} \quad x^r - x + \frac{1}{4} = (x - \frac{1}{2})^2 = 0 \Rightarrow x = \frac{1}{2}$$

$$a = \frac{1}{2} \quad f(\frac{1}{2}) = 0 \Rightarrow a + b = \frac{1}{2} + 0 = \frac{1}{2}$$

q

$$\frac{yx+a}{x^r+4x+b} = \frac{y}{x-c} \Rightarrow (yx+a)(x-c) = yx^r+ax-c-x^r-c = yx^r+x(a-rc)-ac$$

$$yx^r+4x+b = (x-c)^r \Rightarrow x^r+4x+b = x^r-rcx+c^r \Rightarrow 4x-b = -rc$$

$$a = y \quad b = 9 \quad c = -r \Rightarrow a+b+c = 1r$$

1.