

الف = $f(x) = \sqrt{x|x|} \rightarrow x|x| \geq 0$ $x \geq 0$
 $g(x) = 1 \rightarrow D_g = R$ $D_f \neq R$ $\checkmark$ $\times$
 $f(x) = \frac{(x^2+1)(x+1) + x + 1}{x^2 + 5x + 1} \rightarrow x \neq 0 \rightarrow D_f \neq R$
 $g(x) = 1 \rightarrow D_g = R$ $\checkmark$ $\checkmark$

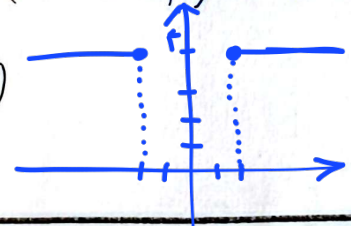
ب $f(x) = \frac{2\sin x - 3\sin x}{2\sin x - 1} \rightarrow 2\sin x - 1 \neq 0$
 $g(x) = 2\sin x$ $D_g = R$ $\rightarrow \sin x \neq \frac{1}{2}$
 $-2 \leq 2\sin x \leq 2 \rightarrow D_g = R$ $\checkmark$ $\checkmark$
 $f(x) = \frac{x}{|x|} \rightarrow |x| \neq 0$ $x \neq 0$ $\textcircled{2}$
 $g(x) = \frac{|x|}{x} \rightarrow x \neq 0$ $\checkmark$
 $f(x) = g(x)$ $\checkmark$ $\checkmark$

الف $f(x) = \left[\frac{x^2}{x^2+1} \right]$ و $g(x) = [x - [x]]$ $\rightarrow D_f = D_g$ $\checkmark$ $\textcircled{2}$
 در این سؤال عدد 0 و - و + مثال نمی آید

ب $f(x) = \frac{1}{[2x]}$ و $g(x) = \frac{1}{[x]}$ $= \frac{[2x]}{[x]}$ $\textcircled{2}$ $\checkmark$
 $D_f \neq D_g$ $\checkmark$ $\textcircled{2}$
 مثال $\frac{2}{3}$ $\checkmark$

ب $f(x) = \frac{1}{\sqrt{x-|x|}}$ $D_f = D_g$ $\checkmark$
 $\sqrt{x-|x|} \geq 0$ $x-|x| \geq 0$ $|x| \geq x$ $D_g = R^-$ $\checkmark$
 2) $f(x) = \frac{x^2-1}{x-1}$ $x \neq 1$ $g(x) = x^2+x$
 $f = \frac{x(x-1)(x+1)}{x-1} = x(x+1)$ $\checkmark$

$f(x) + g(x) = x^2 + x + 1$
 $f(x) - g(x) = x^2 - x + 1$
 $2f(x) = 2x^2 + 2$
 $f(x) = x^2 + 1$ $g(x) = x$
 $f^2 - g^2 = (f-g)(f+g)$ $\textcircled{2}$
 $(x^2+1-x)(x^2+1+x) = x^4 + x^2 + 1$ $\checkmark$
 3) $D_f = D_g$ $\checkmark$ $\textcircled{2}$
 رابطه تابع $\checkmark$
 $f(x) = x^2+1$ $g(x) = x$ $\checkmark$
 3) $D_f = D_g$ $\checkmark$ $\textcircled{2}$
 برابرند $\checkmark$

$f(x) = x - \sqrt{x^2-4}$
 $g(x) = x + \sqrt{x^2-4}$ $\textcircled{115}$
 $(x - \sqrt{x^2-4})(x + \sqrt{x^2-4}) = x^2 - (x^2-4) = 4$ $\checkmark$
 $y \in R$ $D_f = (-\infty, -2] \cup [2, +\infty)$ $\checkmark$


$g(x) = \frac{x-b}{x^2-2x-1}$, $f(x) = \frac{ax+1}{x^2-mx+n}$ $am-bn?$ $\checkmark$
 $f(x) \cdot x^2 \rightarrow \frac{ax^2+1}{x^2-2mx+n}$ $\checkmark$
 $\begin{cases} 2a=1 \rightarrow a=1/2 \\ -b=2 \rightarrow b=-2 \\ 1-2m=n \rightarrow m=0 \\ -1=n \rightarrow n=-1 \end{cases}$ $\textcircled{2}$

$\left(\frac{1}{2}\right)\left(\frac{1}{-1}\right) - (-2)(-1) = \frac{1}{-2} - 1 = -\frac{1}{2} - 1 = -\frac{3}{2}$ $\checkmark$

$$f(x) = g(x) \Rightarrow \frac{bx+1}{ax+b} = c \rightarrow bx+1 = acx+cb \rightarrow \begin{cases} b=ac \\ bc=1 \end{cases} \rightarrow c = \pm \frac{1}{c} \quad (5)$$

$$c = \frac{1}{c} \rightarrow b = c \rightarrow a = -\frac{1}{c} \rightarrow \frac{ab}{c} = -1$$

$$c = -\frac{1}{c} \rightarrow b = -c \rightarrow a = \frac{1}{c} \rightarrow \frac{ab}{c} = 1$$

انتخاب از تابع ۱-۲ به تابع ۱ می بینیم $\Leftarrow$

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

$$g = f(1, 4), (2, 6), (-1, 4), (5, 0) \text{؟}$$

$$f \rightarrow f(1, 1), (2, 1), (3, 2), (-1, -1), (0, 0) \text{؟}$$

$$f+g \rightarrow f(-1, -2), (2, 1), (3, 2) \text{؟} \rightarrow \{(-1, -2), (2, 1), (3, 2)\} \text{؟}$$

$$R_{\frac{2\pi}{3}} = \{1, 2, 3\}$$

$$f = f(1, a), (-3, a-2b), (c, d), (4, d) \text{؟}$$

$$g = f(1, -1), (-3, 1), (a-3b, d) \text{؟}$$

$$c = a - 3b$$

$$a = d = -1 \quad 3a - 2b = 1$$

با در نظر گرفتن این دو معادله در نگاه دیگر می آید یا نه

$$a = -1 \quad d = -1 \quad c = d \quad b = -2$$

$$d + c = -1 + d = 0 \quad (4)$$

$$b = 0 \rightarrow 1 - fm = 0 \rightarrow -fm = -1 \quad fm = 1 \quad \boxed{m = \frac{1}{f}}$$

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

$$f(x) = \frac{2x+a}{x^2+4x+b}, \quad g(x) = \frac{2}{x-c}$$

از طریق کسری - کسری می بینیم

$$(2x+a)(x-c) = 2x^2 - 2cx + ax - ac = 2x^2 + (a-2c)x - ac = 2(x^2+4x+b)$$

$$\Rightarrow 2x^2 + 12x + 2b =$$

$$\rightarrow a - 2c = 12 \quad \boxed{12 + 2c = a}$$

$$\Rightarrow -ac = 2b \quad b = -\frac{ac}{2} \rightarrow b = -\frac{c^2}{4} - 6c \quad x = 2(-3) + 12 = 6$$

$$x^2 + 4x + b = \left(\frac{a}{2} + x\right)(-c + x) \Rightarrow \frac{-a}{2} = c \quad \frac{1}{2}(2c+12) = c = (c-3)$$