

نام و نام خانوادگی هجسته دفسری (تبریز) پاسخنامه تشریحی تکلیف شماره کلاس دبیران: دم A

ع، د، ب

الف) $f(x) = \sqrt{x|x|} = x \geq 0$
 $g(x) = x = R$
 برابر نیست X

ب) $f(x) = \frac{(x+3)(x+1)+x+4}{x^2+5x+6} \rightarrow x^2+5x+6 \neq 0$
 $\rightarrow \Delta > 0 \rightarrow \sqrt{b^2-4ac} \rightarrow \sqrt{25-24} \rightarrow 1$
 منق
 چون زیر رادیکال منفی پس هیچ هزتر صفر نیست
 $f(x) = \frac{R}{R} = 1$
 $g(x) = 1$
 با هم برابر است ✓

د) $f(x) = \frac{x}{|x|} \rightarrow R - \{0\}$, $g(x) = \frac{|x|}{x} \rightarrow R - \{0\}$
 با هم برابر است ✓

ج) $f(x) = \frac{4\sin^2 x - 4x}{4\sin x - 3} \rightarrow 4\sin x - 3 \neq 0$
 $4\sin x \neq 3 \rightarrow \sin x \neq \frac{3}{4} \rightarrow R \rightarrow \sin$
 چون $\sin$ بین -1 و 1 است
 $g(x) = 4\sin x \rightarrow R$
 برابر است ✓

الف) $f(x) = \left[\frac{x^2}{x^2+1} \right]$, $g(x) = [x - [x]]$ $\rightarrow$ دامنه $= 0$ هر دو $f(x) = g(x)$ ✓

ب) $f(x) = \frac{1}{[x]}$ $\rightarrow Df = R - \{0\}$, $g(x) = \frac{1}{\{x\}}$ $\rightarrow Dg = R - \{0\}$ $f(x) \neq g(x)$ X

ج) $f(x) = \frac{1}{\sqrt{x-|x|}}$, $g(x) = \frac{1}{\sqrt{|x|-x}}$ $f(x) = \emptyset \rightarrow$ تنه $g(x) = (-\infty, 0)$
 هر دوی برابریم هیچ صفری نیست
 $f(x) \neq g(x)$ X

د) $f(x) = \frac{x^2-x-\frac{1}{2}}{x-1}$, $g(x) = x^2+x$ $f(x) = 1$, $g(x) = 2$ $f(x) \neq g(x)$ X

الف) $f(x) + g(x) = x^2 + x + 1$, $f(x) - g(x) = x^2 - x + 1 \rightarrow f'(x) - g'(x)$ ثابت

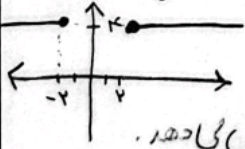
$f(x) + g(x) + f(x) - g(x) = x^2 + x + 1 + x^2 - x + 1 \rightarrow 2f(x) = 2x^2 + 2$
 $\rightarrow f(x) = x^2 + 1$

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

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

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

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



$|x| \geq 2$, $|x| < 2$ $\sqrt{x^2 - 4}$

$x = \pm 2$ رادیکال صفر است و در تابع ضعیف می دهیم.

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

$f(x) = \frac{ax+b}{x^2-mx+n}$, $g(x) = \frac{x-b}{x^2-3x-5}$ $\xrightarrow{x \neq \frac{1}{2}}$ $\frac{\frac{1}{2}(x-b)}{x^2-\frac{3}{2}x-\frac{5}{2}} = \frac{ax+b}{x^2-mx+n}$

$x^2 - \frac{3}{2}x - \frac{5}{2} = x^2 - mx + n \rightarrow n = -\frac{5}{2}$, $m = \frac{3}{2}$ و $\frac{1}{2}x - \frac{1}{2}b = ax + b$

$\rightarrow a = \frac{1}{2}$, $-\frac{1}{2}b = 2 \rightarrow b = -4$ $am - bn = (\frac{1}{2} \times \frac{3}{2}) - (-\frac{5}{2} \times \frac{1}{2})$

$= \frac{3}{4} - 10 = -\frac{37}{4}$ ✓

$$f(x) = \frac{bx+c}{ax+b} \quad , \quad g(x) = c \quad \cap G = \mathbb{R} - \{a\} \quad a = -\frac{c}{b} = -\frac{1}{2}, b = 2 \quad \text{یا} \quad a = \frac{1}{2}, b = -2$$

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

$$bx+c = c(ax+b) \rightarrow \{b=ac, c=bc\}, b^2=1, b=\pm 1$$

$$\frac{ab}{c} = \frac{(-\frac{1}{2}) \times 2}{\frac{1}{2}} = (-2) \quad \text{یا} \quad \frac{ab}{c} = \frac{\frac{1}{2} \times (-2)}{-\frac{1}{2}} = (2)$$

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

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

$$2g = \{(2, 1), (3, 2), (-1, -1), (0, 0)\}, f+g = \{(2, 1), (3, 4), (-1, -2)\}$$

$$\frac{2g}{f+g} = \{(2, \frac{1}{1}), (3, \frac{2}{4}), (-1, \frac{-1}{-2})\} = \{(2, 1), (3, \frac{1}{2}), (-1, \frac{1}{2})\}$$

$$f = \{(2, a), (-3, 3a-2b), (c, 5), (2, d)\}, g = \{(2, -1), (-3, 1), (a-3b, 5)\}$$

$$(2, a) \cap (2, d) = (2, -1) \rightarrow a = d = -1$$

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

$$a-3b = c \rightarrow -1 - (3 \times -2) = c \rightarrow c = 5 \quad d+c = 5-1 = 4$$

چون a یک عدد است پس Δ باید صفر شود.

$$\rightarrow 1-4x-1 \times n = 0 \quad \Delta = b^2 - 4ac$$

$$1+4n = 0 \rightarrow n = -\frac{1}{4} \rightarrow -m = \frac{1}{4} \Rightarrow m = -\frac{1}{4}$$

$$f(x) = \sqrt{-x^2+x-m} = \sqrt{-x^2+x-\frac{1}{4}} \rightarrow \frac{-1 \pm \sqrt{1-4x-1 \times \frac{1}{4}}}{-2} = \frac{-1 \pm \sqrt{1-4x-\frac{1}{4}}}{-2}$$

$$a = \frac{\sqrt{1}}{2}, b = -(\frac{\sqrt{1}}{2})^2 + \frac{\sqrt{1}}{2} - \frac{1}{4} = -\frac{1}{4} + \frac{\sqrt{1}}{2} - \frac{1}{4} = -\frac{1}{2} + \frac{\sqrt{1}}{2} = \frac{-1+\sqrt{1}}{2} = \frac{-1+1}{2} = 0$$

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

$$\rightarrow \frac{4x+a}{x^2+4x+b} = \frac{4x}{x^2-cx} \rightarrow 4x+a = 4x \rightarrow a=0$$

$$x^2+4x+b = x^2-cx \rightarrow b=0, c=-4$$

$$a+b+c = 0+0+(-4) = -4$$

نکته: