

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: نام:

الف) $f(x) = \sqrt{x|x|}$, $g(x) = x$ $x|x| \geq 0 \Rightarrow D_f = R^+ \cup \{0\}$ $D_f = D_g$ $f(x) = g(x)$
 ب) $f(x) = \frac{(x+3)(x+1)+x+4}{x^2+3x+4}$, $g(x) = 1$ $m^2+3m+4=0$ $\begin{cases} D_f = R \\ D_g = R \end{cases}$ $f(x) = g(x)$
 ج) $f(x) = \frac{4\sin^2 x - 4\sin x}{4\sin x}$, $g(x) = 2\sin x$ $4\sin x - 4 \rightarrow \sin x \neq \frac{1}{2}$ $D_f = D_g$ $f(x) \neq g(x)$
 د) $f(x) = \frac{x}{|x|}$, $g(x) = \frac{|x|}{x}$ $|x| \neq 0 \rightarrow x \neq 0$ $D_f = D_g$ $f(x) = g(x)$

الف) $f(x) = \left[\frac{x^2}{x^2+1} \right]$, $g(x) = [x - [x]]$ $\begin{cases} D_f = R \\ D_g = R \end{cases}$ $f(x) \neq g(x)$
 ب) $f(x) = \frac{1}{[2x]}$, $g(x) = \frac{1}{x[x]}$ $\begin{cases} D_f = R - \{0\} \\ D_g = R - [0, 1) \end{cases}$ $f \neq g$
 ج) $f(x) = \frac{1}{\sqrt{x-|x|}}$, $g(x) = \frac{1}{\sqrt{|x|-x}}$ $\begin{cases} x-|x| > 0 \rightarrow |x| < x \\ |x|-x > 0 \rightarrow |x| > x \end{cases}$ $D_f = \emptyset$ $D_g = R^-$ $f \neq g$
 د) $f(x) = \begin{cases} \frac{x^2-x}{x^2-1} & ; x \neq 1 \\ \frac{1}{2} & ; x = 1 \end{cases}$, $g(x) = \frac{1}{x^2-1}$ $\begin{cases} D_f = R - \{1, -1\} \cup \{0\} \\ D_g = R - \{1, -1\} \end{cases}$ $f \neq g$

$f(x) + g(x) = x^2 + x + 1$, $f(x) - g(x) = x^2 - x + 1$
 $f'(x) - g'(x) = ?$ $(f(x) + g(x))(f(x) - g(x)) = (x^2 + x + 1)(x^2 - x + 1) = x^4 - x^2 + x^2 - x + x + 1 = x^4 + 1$
 $-x^2 + x + x^2 - x + 1 = x^2 + 1$
 $+ \begin{cases} f(x) \cdot g(x) = x^2 - x + 1 \\ f(x) + g(x) = x^2 + x + 1 \end{cases} \rightarrow f(x) = x^2 + 2 \rightarrow f'(x) = 2x$
 $x^2 + 1 - g(x) = x^2 - x + 1 \rightarrow -g(x) = -x \rightarrow g(x) = x$

$f(x) = x - \sqrt{x^2 - 4}$, $g(x) = x + \sqrt{x^2 - 4}$ $f \times g = ?$
 $x^2 - 4 \geq 0 \rightarrow x \leq -2$ or $x \geq 2$
 $D_f = [-2, 2]$ $D_g = [-2, 2]$ $f \times g = \{(x, f(x)) (x, g(x))\}$
 $f \times g = \{(x, f(x)) (x, g(x))\}$

$f(x) = \frac{ax+b}{x^2-mx+n}$, $g(x) = \frac{x-b}{x^2-3x-4}$ $am - bn = ? \rightarrow \frac{1}{4} - 4 = -\frac{15}{4}$
 $(n-a)(x+b) \rightarrow \frac{a}{4} = -1$
 $m = \frac{a}{4} - 1 = -\frac{15}{4}$
 $n = \frac{a}{4} \times (-1) = -\frac{a}{4}$
 $a = 1$
 $b = -2$

$$f(n) = \frac{bn+r}{an+b}, \quad g(n) = c \quad D_g = \mathbb{R} - \{a\} \quad \frac{ab}{c} = ?$$

$$\frac{bn+r}{an+b} \rightarrow b = \frac{1}{4} \rightarrow f(n) = \frac{1}{4} \quad g(n) = c \quad c = \frac{1}{4} \quad \frac{-r}{\frac{1}{4}} = -4$$

$$D_g = \mathbb{R} - \{a\} \rightarrow a = -\frac{1}{4} \quad \frac{ab}{c} = ? \quad -\frac{1}{4} \times \frac{1}{4} = -\frac{1}{16}$$

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

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

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

$$a = a \Rightarrow a = -1 \quad a = -1 \quad -3 - 2b = 1 \Rightarrow -2b = 4 \Rightarrow b = -2$$

$$d + c = ? \quad -1 + d = 4$$

$$c = d$$

داده های دوم هم برابر باشند. $a = a$ است بدین جهت که اگر $a = a$ باشد، پس باید که $a = a$ باشد. f و g برابرند پس باید که $a = a$ باشد. f و g برابرند پس باید که $a = a$ باشد.

$$f(n) = \sqrt{-n^2 + n - m} \quad g(n) = \{(a, b)\} \quad a + b = ?$$

$$0_f = a \rightarrow \sqrt{-a^2 + a - m} = b \rightarrow -\sqrt{m} = b \quad m \leq 0$$

باید که a و b و m همگی صفر باشند.

$$a + b = 1$$

$$f(n) = \frac{xn+a}{n^2+4n+b} \quad g(n) = \frac{y}{n-c} \quad a+b+c = ? \Rightarrow -x + (-y) + (-y) = -14$$

$$\rightarrow -v \rightarrow x^2 + 4n - v \rightarrow (n+v)(n-1)$$

$$\frac{xn+a}{n^2+4n+b} = \frac{y}{n-c} \Rightarrow x^2 + 4n + b = n - c \rightarrow a \rightarrow \begin{cases} 1, a \\ x, c \\ y, y \\ -1, v \end{cases}$$

$$\frac{x(n-1)}{(n+v)(n-1)} \Rightarrow \frac{y}{n+v}$$

$$\begin{cases} c = -v \\ b = -v \\ a = -x \end{cases}$$