

نام و نام خانوادگی پریناز (هقانی) پاسخنامه تشریحی تکلیف شماره کلاس دهم جزیر B

الف $f(x) = \sqrt{x|x|}$ $x|x| \geq 0 \Rightarrow \sqrt{x^2} = |x| = x$ $x \geq 0$ $D_f = [0, +\infty)$
 $g(x) = x$ $D_g = \mathbb{R}$ $D_f \neq D_g$ دو تابع با هم برابر نیستند

ب $f(x) = \frac{(x+3)(x+1)+3+x}{x^2+5x+6}$, $g(x) = 1$ هم دامنه ها برابر است $\Rightarrow$ برابرند
 $\frac{x^2+3x+3x+3+3+x}{x^2+5x+6} = \frac{x^2+7x+6}{x^2+5x+6}$ $\xrightarrow{g(x)=f(x)} \Delta = -3$ $D_f = D_g$ هم ضرایب ها
 $\frac{x^2+7x+6}{x^2+5x+6} = 1 \Rightarrow x^2+7x+6 = x^2+5x+6 \Rightarrow 2x = 0 \Rightarrow x = 0$ $D_f = \mathbb{R}$ $D_g = \mathbb{R}$ متوجه عمل می کنند

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

$\left[\frac{x^2+1-1}{x^2+1} \right] \Rightarrow \left[1 - \frac{1}{x^2+1} \right]$ $f(x) = g(x)$ $\checkmark$ تابع با هم برابرند

ب $f(x) = \frac{1}{[2x]}$, $g(x) = \frac{1}{[x]}$ $D_f = \mathbb{R} - [0, \frac{1}{2})$ $D_f \neq D_g$ برابر نیستند
 $0 \leq 2x < 1 \Rightarrow 0 \leq [2x] < 1 \Rightarrow [2x] \neq 0$ $D_g = \mathbb{R} - [0, 1)$

Subject: _____

Date _____

①

$$c) f(x) = \frac{x^2 \sin^2 x - x \sin x}{x^2 \sin x - x}, \quad g(x) = x \sin x$$

$$\frac{x^2 \sin x (x \sin x - 1)}{x^2 \sin x - x} = \frac{x \sin x + 1}{\sin x + \frac{1}{x}} \Rightarrow D_f = D_g \quad x \in \mathbb{R}$$

$f(x) = g(x)$ در همه جا صدق نمی کند

هم دامنه ها برابر است پس دو تابعه مانند هم عمل می کنند و قابل ضربند

$$d) f(x) = \frac{x}{|x|}, \quad g(x) = \frac{|x|}{x}$$

$$D_f = \mathbb{R} \setminus \{0\} \quad D_g = \mathbb{R} \setminus \{0\} \quad f(x) = g(x)$$

$$D_f = D_g \quad \text{دو تابع برابرند}$$

ج) $f(x) = \frac{1}{\sqrt{x-|x|}}$, $g(x) = \frac{1}{\sqrt{|x|-x}}$ (سوال ۲)

$x - |x| > 0$

$|x| - x > 0$

$x > |x|$

$|x| > x \rightarrow \text{if } x < 0$

$D_f = \emptyset$

$D_g = (-\infty, 0)$ $D_g \neq D_f$

برابر نیستند

د) $f(x) = \begin{cases} \frac{x^3 - x}{x - 1} & ; x \neq 1 \\ 1 & ; x = 1 \end{cases}$, $g(x) = x^2 + x$

$D_f = \mathbb{R}$

$x \neq 1 \rightarrow x^2 + x = \frac{(x-1)(x+1)}{x-1} = x^2 + x$

$D_g = \mathbb{R}$

$f(x) = g(x)$

$D_f = D_g$

با هم برابرند

$f(x) - g(x) = x^r - x + 1$
 $f(x) + g(x) = x^r + x + 1$
 $r f(x) = r x^r + r$
 $f(x) = x^r + 1$ ✓
 $g(x) = x$ ✓

$(x^r + 1)^r = x^r + 1 + r x^r$
 $(x^r)^r = x^r \Rightarrow x^r + 1 + r x^r - x^r = x^r + 1 + x^r$ ✓

r

$f(x) = x\sqrt{x^r - \varepsilon}$ $x^r - \varepsilon \geq 0$
 $x \geq r$ $x \leq -r$ $D_f = [r, +\infty) \cup (-\infty, -r]$
 $g(x) = x + \sqrt{x^r - \varepsilon} \rightarrow D_g = [r, +\infty) \cup (-\infty, -r]$

$f(x) \times g(x) = x^r - (x^r - \varepsilon) = \varepsilon$

r

$g(x) = \frac{x - b}{r x^r - r x - \omega} \Rightarrow r(x - \frac{\omega}{r})(x + 1) = (r x - \omega)(x + 1)$

$\Delta = b^r - \varepsilon a c = r^2 - \varepsilon(r)(-\omega) = r^2$

$f(x) = \frac{ax + r}{x^r - \frac{r}{\omega}x + \frac{\omega}{r}}$

$\frac{1}{r} : \text{جواب}$

Δ

$$g(x) = \frac{x-b}{rx^r - rx - \omega} \Rightarrow r(x - \frac{\omega}{r})(x+1) = (rx - \omega)(x+1) \quad \left(\frac{1}{r} : \text{باج } \Delta \right)$$

$$\Delta = b^r - \xi ac = r^2 - \xi(r)(-\omega) = r^2 + r\omega$$

$$\frac{+b^r + \sqrt{\xi a}}{\xi} = \frac{\omega}{r} / \frac{-\xi}{\xi} = -1 \quad g(x) = \frac{x-b}{(rx-b)(x+1)}$$

$$f(x) = \frac{ax+r}{x^r - \frac{r}{r}x - \frac{\omega}{r}}$$

$$g(x) = \frac{x-b}{r(x^r - \frac{r}{r}x - \frac{\omega}{r})}$$

$$f(x) = \frac{ax+r}{x^r - mx + n}$$

$$x^r - mx + n = (rx - \omega)(x+1)$$

$$r(x-b) = ax+r$$

$$x^r - \left(\frac{r}{r} \right) x + \left(\frac{\omega}{r} \right) = \frac{1}{r} \frac{(rx - \omega)(x+1)}{rx^r - rx - \omega}$$

$$m = \frac{r}{r}$$

$$n = -\frac{\omega}{r}$$

$$rx - rb = ax + r$$

$$a = r$$

$$b = -1$$

$$am - bn = \frac{1}{r} \left(\frac{r}{r} \right) - \left(-\frac{\omega}{r} \right) \left(\frac{\omega}{r} \right) = \frac{1}{r}$$

$$\frac{ax+r}{x^r - \frac{r}{r}x - \frac{\omega}{r}} = \frac{x-b}{r(x^r - \frac{r}{r}x - \frac{\omega}{r})}$$

$$\rightarrow ran + \xi = x - b$$

$$a = \frac{1}{r}$$

$$b = -1$$

$$am - bn = \frac{1}{r} \left(-\frac{r}{r} \right) - \left(-\frac{\omega}{r} \right) \left(\frac{\omega}{r} \right) = \frac{r}{\xi} - 1 = -\frac{r}{\xi}$$

$$\begin{aligned}
 bc = r &\rightarrow ac^{\frac{1}{r}} \rightarrow a < \frac{1}{r}, b = \pm 1 \\
 b = ac &\rightarrow ac^{\frac{1}{r}} = r \rightarrow c = -\frac{1}{r} \rightarrow a < \frac{1}{r}, b = -r \rightarrow \frac{ab}{c} = \pm 2
 \end{aligned}$$

مع $\frac{1}{r} > 0$
 $\frac{1}{r} < 0$
 $\frac{1}{r} < 0$

$$D_g = R - \{a\}$$

$$g(x) = c$$

$$f(x) = \frac{bx+r}{ax+b}$$

$$ax+b=0$$

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

$$D_g = R - \{-\frac{b}{a}\}$$

$$\frac{1}{a} > 0$$

$$b' > 0$$

$$\frac{1}{a} < 0$$

$$-b' < 0$$

$$\frac{ab}{c} = -\frac{b'}{c}$$

$$c = -\frac{ab}{b'}$$

$$ab = (-\frac{1}{a})b$$

✓

$$g = \{(r, r), (r, -1), (a, r), (a, -1)\}$$

$$f = \{(r, r), (r, -1)\}$$

$$f = \{(r, r), (r, -1), (r, r), (r, -1)\}$$

$$\frac{f+g}{f+g} = \{(r, r), (r, -1), (a, r), (a, -1)\}$$

$$= \{(r, r), (r, -1), (r, r), (r, -1)\}$$

✓

$$R_{fg} = \{1, r, r\}$$

$$a = d = -1$$

$$c =$$

$$f = \{(r, a), (r, a-rb), (c, a), (c, a)\}$$

$$d+c = -1+a$$

$$g = \{(r, -1), (r, -1), (a-rb, a), (a-rb, a)\}$$

$$ra-rb=1$$

$$r(-1)-rb=1$$

$$-1+r=a$$

✓

$$-r-rb=1$$

$$-rb=r$$

$$b=-r$$

$$r(-1) - r b = 1$$

$$-r b = 1 \quad b = -r$$

$$a = r = \frac{1}{r}$$

$$g(r) = \{(a, b)\}$$

$$f(r) = \sqrt{-r^r + r - m}$$

$$a + b = \frac{1}{r} + 0$$

$$= \frac{1}{r}$$

$$-r^r + r - \frac{1}{r}$$

$$-r^r + r - m = 0$$

$$b^r - \sum a c$$

$$1 - f(-1)(-m) = 1 - r m = 0$$

$$r m = 1 \quad m = \frac{1}{r}$$

$$-(r - \frac{1}{r})^r$$

$$a = \frac{1}{r}$$

$$\frac{r a + a}{r^r + r a + b}$$

$$= \frac{r}{a - c}$$

$$\Rightarrow r^r a + r a + r b = r a^r - r c a + a c - a c$$

$$D_f = \{r a - \{c\}\}$$

$$r a^r + r a + r b = r a^r + a(-r c + a) - a c$$

$$-r c + a = r \Rightarrow r + a = r$$

$$a = r$$

$$(r - c)^r = r^r + r a + b$$

$$r + (c) - r c a = r^r + r a + b$$

$$-r c = r$$

$$c = -r$$

$$-r c = r$$

$$c = -r$$

$$r - r + r = r$$