

نام و نام خانوادگی مجید حسین شهباز پاسخنامه تشریحی تکلیف شماره کلاس یازدهم پرستار

الف) $\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \Rightarrow \frac{(x-1)^2 - x^2}{x^2 - x} \geq 0 \Rightarrow \frac{-2x+1}{x(x-1)} \geq 0 \rightarrow \frac{0}{x} - \frac{1}{x} + \frac{1}{x-1} \Rightarrow D_f = (-\infty, 0) \cup (\frac{1}{2}, 1)$

$$\vdash) \pi_+ | \neq 0 \Rightarrow \pi \neq -1$$

$x \neq 0$

$$\frac{r}{x-1} + \frac{1}{x+1} \neq 0 \Rightarrow \frac{rx+1}{x^2-1} \neq 0 \Rightarrow x \neq -r, 1, -1$$

$$\Rightarrow D_f = 1R - \left\{ \overset{-a}{\underset{\checkmark}{\cancel{2\epsilon}}}, -1, 0, 1 \right\}$$

صورت سوال را استبه نویسی می چون درست حل کردی
با اینفاق نمره دهی

(الف) $\left(\frac{1}{r}\right)^x - 9 = 0 \Rightarrow \left(\frac{1}{r}\right)^x = 9 \Rightarrow \frac{1}{r^x} = 9 \Rightarrow 1 = 9 \times r^x \Rightarrow r^{2x} r^x = 1 \Rightarrow 1+x=0 \Rightarrow x=-1$
 $r^2 - r^x = 0 \Rightarrow r^2 = r^x \Rightarrow r^{2-x} = 1 \Rightarrow 2-x=0 \Rightarrow x=\frac{2}{1}$

$$\left(\left(\frac{1}{r}\right)^x - 9\right) \left(r - r^x\right) \geq 0 \rightarrow \frac{-\frac{9}{r}}{\frac{1}{r} - \frac{1}{r^x}} \Rightarrow D_f = 1R - \left(r, \frac{9}{r}\right)$$

$\therefore x-1 \geq 0 \Rightarrow x \geq 1$
 $1-\sqrt{x-1} \geq 0 \Rightarrow \sqrt{x-1} \leq 1$
 $\Rightarrow x-1 \leq 1 \Rightarrow x \leq 2$

$$x^2 - x - 2 > 0 \rightarrow \frac{-1 \pm \sqrt{1+8}}{2} \Rightarrow x = 1 \text{ or } -2$$

$$x^2 - 1 \geq 0 \Rightarrow x^2 \geq 1 \Rightarrow 1 \leq x \leq -1$$

$$\sqrt{x^2-1}+1 \neq 0 \Rightarrow \sqrt{x^2-1} \neq -1 \rightarrow \text{معيض به قرار}$$

⑦ $\rightarrow P_f = (-\infty, -1) \cup (1, +\infty)$

$$-x^2 + ax + 1 \xrightarrow{x=-1} -1 - a + 1 = 0 \Rightarrow -a = 0 \Rightarrow a = 0$$

$$-x^2 - \frac{x}{f} + r \geq 0 \rightarrow \Delta = b^2 - 4ac = \frac{1}{f^2} + 4r = \frac{r^2}{f} \rightarrow \sqrt{\Delta} = \sqrt{\frac{r^2}{f}} = \frac{r}{\sqrt{f}}$$

$$\rightarrow x = \frac{0.12 \pm 1.12}{-1} = \begin{matrix} + \\ - \end{matrix} \rightarrow -2$$

$$\hookrightarrow \frac{x}{y} = b$$

$$\Rightarrow a + b = \frac{-1}{r} + \frac{r}{r} = \frac{r-1}{r} = \boxed{1}$$

$$f(x) - x \geq 0 \Rightarrow \begin{cases} x \geq 1 \Rightarrow 1 - x \geq 0 \Rightarrow x - 1 \geq 0 \Rightarrow x \geq 1 \quad \textcircled{\text{I}} \\ x < 1 \Rightarrow 1 - x \geq 0 \Rightarrow x + 1 \geq 0 \Rightarrow x \geq -1 \quad \textcircled{\text{II}} \end{cases}$$

$$(I \cup \mathbb{H}) = D_g = [r, +\infty)$$

$$f(x) = 2x^2 - 5x \Rightarrow 2x(x-2) \Rightarrow (\sqrt{3}+2)\left(\frac{\sqrt{3}-2}{2}\right) = \frac{3-4}{2} = \boxed{-\frac{1}{2}}$$

$$\sin \frac{\pi}{3} + \cos 2\pi = \frac{\sqrt{3}}{2} + 1 = \frac{\sqrt{3}+2}{2} \Rightarrow x$$

6

$$f(x) = a \Rightarrow \frac{x+1}{x-1} = a \Rightarrow x = \frac{-a-1}{a-1} = \frac{a+1}{a-1} = f(a) \Rightarrow \frac{a+1}{a-1} = \frac{a+1}{a-1}$$

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

$$\Rightarrow a = \mathbb{R} - \{1\}$$

7

$$x^2 - 5x = -2 \Rightarrow x = 2 = g(a)$$

$$\Rightarrow g(a) = 2 \Rightarrow \sqrt{a^2 - 1} = 2 \Rightarrow a^2 - 1 = 4 \Rightarrow a^2 = 5 \Rightarrow a = \boxed{\pm \sqrt{5}}$$

8

$$x + 2 = 5 \Rightarrow x = 3 \rightarrow 1^2 - 2 + 5 = 4 = f(1)$$

$$x + 2 = -2 \Rightarrow x = -4 \rightarrow (-4)^2 - 2(-4) + 5 = 16 + 8 + 5 = 29 = f(-4)$$

$$\Rightarrow f(1) \cdot f(-4) = 4 \cdot 29 = \boxed{116}$$

9

$$2 \cos^2 x + \cos x = \left(2 \cos x + \frac{1}{2}\right)^2 - \frac{1}{4} \Rightarrow \left(2 \cos x + \frac{1}{2}\right)^2 - \frac{1}{4} = \frac{9}{4} \Rightarrow \left(2 \cos x + \frac{1}{2}\right)^2 = \frac{10}{4} = \frac{5}{2} \Rightarrow 2 \cos x + \frac{1}{2} = \pm \sqrt{\frac{5}{2}}$$

$$\Rightarrow 2 \cos x = \frac{5}{2} - \frac{1}{2} = 2 \Rightarrow \cos x = 1 \Rightarrow x = \frac{0}{2} \Rightarrow x = \frac{\pi}{3} \rightarrow \tan \frac{\pi}{3} = \frac{\sin \frac{\pi}{3}}{\cos \frac{\pi}{3}} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \boxed{\sqrt{3}}$$

10

در حالتی که x برابر $\frac{\pi}{3}$ هیچ وجهی نمی توانیم پیدا کنیم و تفاوتی در جواب ایجاد نمی کنند.

تقریبیه‌های مفرجه‌ها نباید در دامنه باشند! $x+1 \neq 0 \rightarrow x \neq -1$ $x \neq 0$ $x-1 \neq 0 \rightarrow x \neq 1$

$$x+2 \neq 0 \rightarrow x \neq -2 \quad \frac{3}{x-1} + \frac{1}{x+2} \neq 0 \rightarrow \frac{3x+4+x-1}{(x-1)(x+2)} \neq 0 \rightarrow 4x+3 \neq 0 \rightarrow x \neq -\frac{3}{4}$$

$$D_f = \mathbb{R} - \left\{ -1, 0, 1, -2, -\frac{3}{4} \right\}$$