

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۱۱۱... کلاس یازدهم نام و نام خانوادگی

$$f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}} \Rightarrow \sqrt{\frac{(x-1)^2 - x^2}{x(x-1)}} \Rightarrow \sqrt{\frac{1-2x}{x(x-1)}}$$

$$\frac{0}{+} - \frac{1}{+} + \frac{1}{+} - \frac{0}{+} \Rightarrow D_f = (-\infty, 0) \cup \left(\frac{1}{2}, 1\right)$$

$$f(x) = \frac{\frac{1}{x+1} - \frac{x}{x}}{\frac{x}{x+1} + \frac{1}{x+2}} = \frac{\frac{-x-1}{x(x+1)}}{\frac{x+1}{(x+1)(x+2)}} = \frac{-x-1}{x+2} \Rightarrow D_f = \mathbb{R} - \left\{1, -2, \frac{-1}{2}, 0, -1\right\}$$

$$f(x) = \sqrt{\left(\frac{1}{x} - 9\right)(x - 49)} \quad \left(\frac{1}{x}\right)^2 = 9 \Rightarrow x = -\frac{1}{3}, \quad x^2 = 49 \Rightarrow x = \pm 7$$

$$\frac{-2}{+} - \frac{9}{+} + \frac{1}{+} - \frac{0}{+} \Rightarrow D_f = \mathbb{R} - \left(-\frac{1}{3}, 7\right)$$

$$\sqrt{x-1} + \sqrt{y+1} = 0 \quad x \geq 1, y \geq -1 \quad \begin{cases} x=1, y=-1 \\ x=2, y=-2 \\ x=3, y=-3 \end{cases} \Rightarrow D_f = \{1, 2, 3\}$$

$$\sqrt{x-1} = 2 \Rightarrow x=5, \sqrt{x-1} = 1 \Rightarrow x=2, \sqrt{x-1} = 3 \Rightarrow x=10, \sqrt{x-1} = 0 \Rightarrow x=1$$

$$f(x) = \frac{\log(x^2 - x - 2)}{\sqrt{x^2 - 1} + 1} \Rightarrow x^2 - x - 2 > 0 \quad \frac{-1 \pm 2}{+2 - 1 +} \quad \mathbb{R} - [-1, 2]$$

$$x^2 - 1 \geq 0 \Rightarrow \mathbb{R} - (-1, 1) \Rightarrow D_f = \mathbb{R} - [-1, 2]$$

$$\sqrt{x^2 - 1} + 1 \neq 0 \quad \text{همیشه}$$

$$f(x) = \sqrt{x + an + nx^2} \Rightarrow \frac{1}{a} - 8 - 0 = \sqrt{-2ax - 1} \Rightarrow ax = -\frac{1}{2}$$

$$\Rightarrow f(x) = \sqrt{-2x^2 + \frac{1}{2}x + 8} \Rightarrow \frac{+\frac{1}{2} \pm \sqrt{\frac{25}{4}}}{-2} \Rightarrow x = -2, x = \frac{5}{2}$$

$$\frac{1}{-} + \frac{1}{+} - \frac{0}{-} \Rightarrow b = \frac{5}{2}, a = -\frac{1}{2} \Rightarrow a+b = 2$$

$$f(x) = \begin{cases} 2x-2 & x \geq 1 \\ 2x+2 & x < 1 \end{cases} \quad g(x) = \sqrt{f(x)-x}$$

$$f(x) - x = 0 \Rightarrow f(x) = x \Rightarrow \begin{cases} 2x-2 = x \Rightarrow x=2 \checkmark \\ 2x+2 = x \Rightarrow x=-2 \checkmark \end{cases}$$

$$\frac{-2}{+} + \frac{2}{+} + \frac{0}{+} \Rightarrow D_f = [-2, 2]$$

$$f(x) = x^2 - 2x \quad f\left(\sin \frac{\pi}{2} + \cos \frac{\pi}{2}\right) = f\left(\frac{\sqrt{2}}{2} + 1\right)$$

$$\Rightarrow f(x) = x(x-1) \Rightarrow f\left(\frac{\sqrt{2}}{2} + 1\right) = \frac{\sqrt{2}}{2} + 1 \left(\frac{\sqrt{2}}{2} - 1\right) = \frac{-1}{2}$$

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

$$f(f(x)) = \frac{\frac{x+1}{x-1} + 1}{\frac{x+1}{x-1} - 1} = \frac{\frac{x+1}{x-1} + 1}{\frac{x+1}{x-1} - 1} = \frac{\frac{x+1+x-1}{x-1}}{\frac{x+1-x+1}{x-1}} = \frac{2x}{2} = x \Rightarrow x=x \Rightarrow \text{identitas}$$

7

$$f(x) = x^2 - 2x \quad g(x) = \sqrt{x^2 - 1}$$

$$f(g(x)) = -2 \Rightarrow f(g(x)) = x^2 - 2x = -2 \Rightarrow x^2 - 2x + 2 = 0 \Rightarrow x = 1$$

$$\Rightarrow g(x) = 1 \Rightarrow \sqrt{x^2 - 1} = 1 \Rightarrow x^2 - 1 = 1 \Rightarrow x = \pm \sqrt{2}$$

8

$$f(x+c) = x^2 - ax + 4$$

$$x+c = 2 \Rightarrow x = 1 \Rightarrow f(2) = 1^2 - a + 4 = 2$$

$$x+c = -2 \Rightarrow x = -4 \Rightarrow f(-2) = 4 \Rightarrow 4 + (-a(-2) + 4) + 4 = 4$$

$$\Rightarrow f(2) \times f(-2) = 2 \times 4 = 8$$

9

$$f(x \cos^2 u + a \cos u) = \epsilon \sin^2 u$$

$$\Rightarrow x \cos^2 u + a \cos u = \epsilon \Rightarrow x \cos^2 u + a \cos u - \epsilon = 0$$

$$\cos u = \frac{1}{2} \Rightarrow u = 60^\circ = \frac{\pi}{3} \Rightarrow \tan \frac{\pi}{3} = \frac{\sqrt{3}}{3}$$