

نام و نام خانوادگی: عادل ابراهیم پاسخنامه تشریحی تکلیف شماره: ۵ کلاس: پنجم V-۹

$$\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{1-2x}{x^2-x} \geq 0 \rightarrow \frac{1}{x} - \frac{1}{x-1} \geq 0 \rightarrow D_f: (-\infty, 0) \cup [\frac{1}{2}, 1)$$

$$\frac{r}{x-1} + \frac{1}{x+r} \neq 0 \rightarrow \frac{rx + r + x - 1}{x^2 + x - r} \rightarrow rx + \Delta \neq 0 \rightarrow x = -\frac{\Delta}{r}$$

$$x \neq -1, 0, 1, -r \quad \mathcal{D}_f: \mathbb{R} - \{0, -1, 1, -r, -\frac{\Delta}{r}\}$$

$$\left[\left(\frac{1}{3}\right)^x - 9\right](32 - 4^x) \geq 0 \quad \left(\frac{1}{3}\right)^x - 9 = 0 \Rightarrow \left(\frac{1}{3}\right)^x = 9 \Rightarrow x = -2$$

$$32 - 4^x = 0 \Rightarrow 32 = 4^x \Rightarrow 2^5 = 2^{2x} \Rightarrow x = \frac{5}{2}$$

$$\sqrt{y+1} = 3 - \sqrt{x-1} \Rightarrow y+1 = 9 + \sqrt{x-1} - 6\sqrt{x-1} \Rightarrow \sqrt{x-1} - 6\sqrt{x-1} + 11 \geq -1$$

$$x \geq 1 \quad y \geq -1$$

$x^2 - x - 2 > 0 \rightarrow \frac{-1 \pm \sqrt{1+8}}{2} = \frac{-1 \pm 3}{2} \rightarrow x_1 = 1 \rightarrow x_2 = -2$
 $D_f: (-\infty, -2) \cup (1, +\infty)$

$$x = -r \rightarrow r' - r a - f \rightarrow a = -\frac{1}{r} \quad -r \times b = \frac{c}{a} = -r \rightarrow b = \frac{r}{r}$$

$$a+b = \frac{r}{r} - \frac{1}{r} = \frac{r-1}{r} = 1 \quad \text{D}$$

$$\left. \begin{array}{l} \sqrt{f(x)-x} \rightarrow f(x) \geq x \xrightarrow{x \geq 1} x-1 \geq 1 \rightarrow x \geq 1 \\ x \leq 1 \rightarrow x+1 \geq x \rightarrow x \geq -1 \end{array} \right\} D: [-1, +\infty)$$

$$f(\sin \frac{\sqrt{2}}{2} + \cos 2\pi) = f(1 + \frac{\sqrt{2}}{2}) = 2(1 + \frac{\sqrt{2}}{2}) - f(1 + \frac{\sqrt{2}}{2})$$

$$= 1 + \frac{\sqrt{2}}{2} + \sqrt{2} - 1 - 2\sqrt{2} = -\frac{\sqrt{2}}{2}$$

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$$f(\alpha) = \frac{\alpha+1}{\alpha-1} \rightarrow f(\frac{\alpha+1}{\alpha-1}) = \frac{\alpha+1+\alpha-1}{\alpha+1-\alpha+1} = \frac{2\alpha}{2} = \alpha$$

$$\alpha \neq 1$$

$$f(f(\alpha)) = \alpha \rightarrow D_f: \mathbb{R} \setminus \{1\}$$

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$$x^2 - f(x) = -1 \rightarrow (x-1)^2 = 0 \rightarrow x=1$$

$$g(\alpha) = 1 \rightarrow \sqrt{\alpha^2 - 1} = 1 \rightarrow \alpha^2 = 2 \rightarrow \alpha = \pm\sqrt{2}$$

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$$x = -4 \rightarrow f(-2) = 3 \cdot 4 + 2 \cdot 0 + 4 = 16$$

$$x = 1 \rightarrow f(1) = 1 - 0 + 4 = 5$$

$$f(1) \times f(2) = 5 \times 16 = 80$$

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$$f(\cos^2 x) + \alpha \cos x = 1, \alpha \rightarrow f(\cos^2 x) + \alpha \cos x - 1/\alpha = 0$$

$$\cos x = \frac{-\alpha \pm \sqrt{\alpha^2 - 4}}{2} \rightarrow \cos x = -\frac{1}{\alpha} \rightarrow -1 \leq \cos x \leq 1$$

$$f(1, \alpha) = \tan^2 45^\circ \rightarrow (\sqrt{3})^2 = 3$$

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ج-۲) $\sqrt{x-1} + \sqrt{y+1} = 3$, $\underbrace{\sqrt{y+1}}_{\text{همواره مثبت}} = \underbrace{3 - \sqrt{x-1}}_{\text{همواره مثبت!}} \rightarrow 3 - \sqrt{x-1} \geq 0 \rightarrow \sqrt{x-1} \leq 3 \rightarrow x \leq 10$

$\downarrow$
 $x-1 \geq 0 \rightarrow x \geq 1$ I

I, II $\rightarrow 1 \leq x \leq 10 \rightarrow D_f = [1, 10]$