

نام و نام خانوادگی هجرتی پاسخنامه تشریحی تکلیف شماره ۵۰ ... کلاس نهم ...

۱۹.۲۵
 $f(x) = \sqrt{\frac{x-1}{x}} - \frac{x}{x-1} \rightarrow x-1 \neq 0 \rightarrow x \neq 1 \quad \frac{x}{x-1} \geq 0 \rightarrow x < 0 \vee x > 1$

باید عبارت زیر رادیکال منفی یا صفر باشد و همچنین علامت کسری! $\rightarrow D: (-\infty, 0) \cup (1, +\infty)$

۱.۲۵
 ب) $f(x) = \frac{1}{x+1} - \frac{2}{x}$
 $\frac{1}{x+1} - \frac{2}{x} \geq 0 \rightarrow \frac{x}{x(x+1)} - \frac{2(x+1)}{x(x+1)} \geq 0 \rightarrow \frac{x - 2x - 2}{x(x+1)} \geq 0 \rightarrow \frac{-x-2}{x(x+1)} \geq 0$

$D: \mathbb{R} - \{-2, -1, 0, 1\}$

~~$f(x) = \sqrt{\left(\frac{1}{x}\right)^2 - 9} (x^2 - 4x)$~~
 $f(x) = \sqrt{\left(\frac{1}{x}\right)^2 - 9} (x^2 - 4x) \rightarrow \left(\frac{1}{x}\right)^2 - 9 \geq 0 \rightarrow \frac{1}{x^2} - 9 \geq 0 \rightarrow \frac{1 - 9x^2}{x^2} \geq 0 \rightarrow 1 - 9x^2 \geq 0 \rightarrow 9x^2 \leq 1 \rightarrow x^2 \leq \frac{1}{9} \rightarrow x \leq \frac{1}{3} \vee x \geq -\frac{1}{3}$

ب) $\sqrt{x-1} + \sqrt{y+1} = 3$
 $\sqrt{x-1} \geq 0$

$0 \leq \sqrt{x-1} \leq 3 \rightarrow 0 \leq x-1 \leq 9 \rightarrow x \in [1, 10]$

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

$x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \rightarrow x < -1 \vee x > 2$
 $x^2 - 1 > 0 \rightarrow x < -1 \vee x > 1$

$D: (-\infty, -1) \cup (2, +\infty)$

$f(x) = \sqrt{a^2 + ax - x^2} \rightarrow -x^2 + ax + a^2 \geq 0 \rightarrow (-x)(x-b) = -x^2 \rightarrow b = \frac{a^2}{x}$

$a \rightarrow -x^2 + \frac{a^2}{x} = a \rightarrow a = -\frac{1}{x}$

$a+b=1$

$f(x) = \begin{cases} x^2 - 2 & x > 1 \\ x^2 + 2 & x < 1 \end{cases}$

$g(x) = \sqrt{f(x)} - x \rightarrow x > 1 \rightarrow x^2 - 2 \geq 0 \rightarrow x \geq \sqrt{2} \rightarrow D: [\sqrt{2}, +\infty)$
 $x < 1 \rightarrow x^2 + 2 \geq 0 \rightarrow x^2 \geq -2 \rightarrow x \in \mathbb{R}$

$$f(x) = x^2 - 4x$$

$$f\left(\sin \frac{\pi}{4} + \cos \frac{\pi}{4}\right) \rightarrow f\left(1 + \frac{\sqrt{2}}{2}\right) \rightarrow e^x = \frac{1}{e} + \ln$$

$$f(x) = x^2 - 4x = \left(\frac{1}{e} + \ln\right) - \left(\frac{1}{e} + \ln\right) = -\frac{1}{e}$$

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

$$a = ?$$

$$f(f(a)) = a$$

$$\rightarrow f(f(a)) = a \rightarrow \text{این تابع دایره وار است}$$

$$\text{پس } a \text{ می تواند هر عددی جز یک باشد}$$

$$f(x) = x^2 - 4x$$

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

$$f(g(a)) = -4 \rightarrow g(a) = \sqrt{a^2 - 1} = f(a)$$

$$a = ?$$

$$f(x) = x^2 - 4x = -4 \rightarrow x^2 - 4x + 4 = 0 \rightarrow (x-2)^2 = 0 \rightarrow x = 2$$

$$\rightarrow \sqrt{a^2 - 1} = 2 \rightarrow a^2 = 5 \rightarrow a = \pm \sqrt{5}$$

$$f(x+y) = x^2 + 2xy + y^2$$

$$f(x) = 1 - 2 + 1 = 0$$

$$f(-1) = 1 + 2 + 1 = 4$$

$$1 \times \sqrt{1} = 1$$

$$f(\cos \alpha + \sin \alpha) = \tan \alpha$$

$$f(r, \theta) \rightarrow f(\cos \alpha + \sin \alpha = r, \theta) \rightarrow \cos \alpha = \frac{r}{2}, \sin \alpha = \frac{r}{2}$$

$$f(r, \theta) = r$$

$$c = \frac{1}{\sqrt{2}} \rightarrow \left(\frac{1}{\sqrt{2}}\right)^2 + \left(\frac{1}{\sqrt{2}}\right)^2 = 1 + r, \theta = 2$$

$$\cos \alpha = \frac{1}{\sqrt{2}}$$

$$\sin \alpha = \frac{1}{\sqrt{2}} \rightarrow \tan \alpha = \frac{\sin \alpha}{\cos \alpha} = 1$$

$$\tan \alpha = 1 \rightarrow \alpha = \frac{\pi}{4}$$

$$\text{الف ١-)} \quad \frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{\overset{x^2-x_{n+1}-x^2}{(x-1)^2 - x^2}}{x(x-1)} \geq 0 \rightarrow \frac{-x_{n+1}}{x(x-1)} \geq 0$$

$$\begin{array}{c} \cdot \\ + \end{array} \begin{array}{c} \frac{1}{x} \\ - \end{array} \begin{array}{c} \cdot \\ + \end{array} \begin{array}{c} \frac{1}{x} \\ - \end{array} \rightarrow D_f = (-\infty, 0) \cup [\frac{1}{x}, 1)$$