

19, 25

پاسخنامه تشریحی تکلیف شماره ... کلاس ...

نام و نام خانوادگی ...

$$f(x) = \left(\frac{1}{x}\right)^{x-1} / y = \sqrt{x^x f(x+1)} \approx 0$$

$$x^x \left(\left(\frac{1}{x}\right)^{x-1} - 1\right) \approx 0$$

x^x	-	0	+	1
$\left(\frac{1}{x}\right)^{x-1} - 1$	+	0	+	-
$x \cdot \ln x$	-	0	+	-
	?	?	?	?

$$Df = [0, 1] \checkmark$$

(2)

1

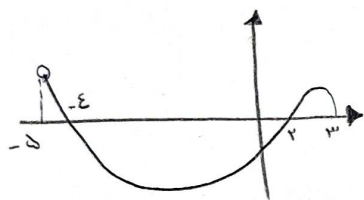
$$f(-x) = \sqrt{-x+1-x+2}$$

$$f(-x) \begin{cases} x > 2 \rightarrow -x+x-2 = -2 \text{ سواره} \\ x < 2 \rightarrow -x-x+2 = -2x+2 \rightarrow -2x+2 \approx 0 \\ \quad \quad \quad -2(+x-1) \approx 0 \end{cases}$$

$$Df = (-\infty, 1] \checkmark$$

(2)

2



$$y = \sqrt{\frac{x-1}{f(x)}} \approx 0$$

-2	-1	1	2	3
	-	+	-	+
	?	?		?

$$Df = (-\infty, 1] \cup (2, 3) \checkmark$$

(2)

3

$$y_1 = \frac{1}{9x^2 - 7x^2 - 4x - 3} = \frac{1}{(3x^2 + x + 1)(3x^2 - x - 3)} = D_{y_1} = R - \left\{ \frac{-1 \pm \sqrt{13}}{6} \right\}$$

$$y_2 = \frac{1}{3x^2 + ax + b} \rightarrow D_{y_2} = R - \left\{ \frac{-a \pm \sqrt{a^2 - 4b}}{2} \right\} \Rightarrow 3x^2 + ax + b = 3x^2 - x - 3 \Rightarrow \begin{cases} a = -1 \\ b = -3 \end{cases} \checkmark$$

$$\sqrt{-(a+b)} = \sqrt{\varepsilon} = 2 \checkmark$$

(2)

4

$$f(x) = x^x + x$$

$$x^x + x^x - 4x^x - 4\varepsilon \approx 0$$

$$t^x + t^x - 4t - 4\varepsilon \approx 0$$

$$(t - \varepsilon)(t^x + t^x + 4t + 4\varepsilon) \approx 0$$

$$A \cap B = [-2, 0) \cup [2, +\infty) \checkmark$$

(2)

(B)

5

$$\sqrt{f(x) - f\left(\frac{\varepsilon}{x}\right)} \approx 0$$

$$x^x + x - \frac{4\varepsilon}{x^x} - \frac{\varepsilon}{x} \approx 0 \rightarrow x^x \left(x^x + x - \frac{4\varepsilon}{x^x} - \frac{\varepsilon}{x} \right) \approx 0$$

$$t - \varepsilon \approx 0 \quad \frac{\varepsilon}{x^x} \approx 0 \quad \sqrt{x^x} = \sqrt{\varepsilon} \approx 0$$

$$x = [2, +\infty)$$

(A)

$$x > 0 \rightarrow x^x + x^x - 4\varepsilon - 4x^x \approx 0$$

$$t^x + t^x - 4t - 4\varepsilon \approx 0 \quad (t - \varepsilon)(t^x + t^x + 4t + 4\varepsilon) \approx 0$$

$f(x) + f(1) =$ $f(x^3 + x) = x^3 - 1$ $f(x) \xrightarrow{x=1} f(1^3 + 1) = 1$ $f(1) \xrightarrow{x=1} f(1^3 + 1) = 1$	$\rightarrow f(x) + f(1) = 1$ ✓	۶	۲
$g(x) = x^3 + 9x^2 + 14x$ $f(x) = x^3 - 9x^2 + 14x$ $g(\sqrt[3]{v-3}) = \frac{-3}{10} = -\frac{3}{10}$ ✓ $f(\sqrt[3]{v+1}) = f(\sqrt[3]{v+1}) = 1 + 9 + 14 = 24$ $g(\sqrt[3]{v-3}) = v - 3v + 9\sqrt[3]{v-3} + 14 = 1 - 8\sqrt[3]{v-3} + 14 = 15 - 8\sqrt[3]{v-3}$	$f(\sqrt[3]{v+1}) = 1 + 9 + 14 = 24$ $g(\sqrt[3]{v-3}) = 15 - 8\sqrt[3]{v-3}$	۷	۲
$f(x) = \sqrt{x+\varepsilon} \sqrt{x-\varepsilon} \Rightarrow \sqrt{(\sqrt{x-\varepsilon} + \varepsilon)^2} = \sqrt{x-\varepsilon} + \varepsilon $ $g(x) = \sqrt{x-\varepsilon} \sqrt{x-\varepsilon} \Rightarrow \sqrt{(\sqrt{x-\varepsilon} - \varepsilon)^2} = \sqrt{x-\varepsilon} - \varepsilon $ $f(x) + g(x) = \begin{cases} \varepsilon < x < 1 = \varepsilon \rightarrow 0 < \varepsilon \\ x \geq 1 = x \sqrt{x-\varepsilon} \end{cases}$	$\frac{a+b}{c} = \frac{\varepsilon}{-\varepsilon} = -1$ ✓ $(a+b)\sqrt{x+c}$	۸	۲
$f(x) = \frac{x+2}{x^2 - \varepsilon x + 3} \rightarrow D_f = \mathbb{R} - \{1, 3\}$ $g(x) = \{(2, 1), (1, 0), (3, 5), (0, \varepsilon)\} \rightarrow D_g = \{2, 1, 3, 0\}$ $\frac{g}{f} = \left\{ (2, \frac{1}{\varepsilon}), (0, \frac{\varepsilon}{3}) \right\}$ ✓	$\frac{1}{\varepsilon}$ ✓	۹	۱, ۷, ۵
الف) $f(x) = \left\{ \left(\frac{1}{4}, 2\right), \left(\frac{3}{4}, -1\right), (2, 2), \left(-\frac{1}{4}, 6\right) \right\}$ ✓ ب) $f(x) = \left\{ (1, 2), (\sqrt{3}, -1), (2, 2) \right\}$ ریشه دوماً باید نبندی ج) $2g^2(x) + 1 = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\}$ ✓ د) $\frac{f}{g} = \left\{ (1, -\varepsilon), (2, -1) \right\}$ ✓	$\frac{1}{\varepsilon}$ ✓	۱۰	۱, ۵

$$\sqrt{v-\varepsilon}$$