

الف) $\frac{x-1}{x} = \frac{x}{x-1} = \frac{(x-1)^2 - x^2}{x(x-1)}$

$= \sqrt{\frac{1-2x}{x^2-x}}$

$\rightarrow x \neq 0 \text{ و } \frac{1}{x}$

$D_f = (-\infty, 0) \cup [\frac{1}{x}, \infty)$

ب) $x \neq 1 \text{ و } 0 \text{ و } -2 \text{ و } -1$

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

$x^2 + 2 = -x + 1$

$x \neq -1$

$x \neq -\frac{1}{2}$

$D_f = \mathbb{R} - \{0, -1, -2, -\frac{1}{2}\}$

$f(x) = \sqrt{(\frac{1}{x})^2 - 9} (3x - x^2)$

$0 = x = -2 \quad 0 = x = 2, \infty$

$-2 \quad \frac{\infty}{x} = 0$

$+ \quad - \quad +$

$D_f = (-\infty, -2] \cup [\frac{\infty}{x}, +\infty)$

$\sqrt{y+1} = x - \sqrt{x-1}$

$x - \sqrt{x-1} \geq 0 \quad x \leq 1$

$x \geq 1 \rightarrow D_f = [1, \infty)$

$x^2 - x - 2 > 0$

$\Delta = 1 + 8 = 9$

$+ \quad - \quad +$

$x = \frac{1 \pm \sqrt{9}}{2}$

$x < \frac{1 - \sqrt{9}}{2}$

$x > \frac{1 + \sqrt{9}}{2}$

صورت سوال را استبه نوشتی و ک چین درست حل کردی با ارفاق زنده شو دادم

1,5

$x^2 - 1 \geq 0 \quad ① \cap ② \rightarrow D_f = (-\infty, \frac{1-\sqrt{9}}{2}) \cup (\frac{1+\sqrt{9}}{2}, +\infty)$

$x^2 + ax + \mu = 0 \rightarrow -x + 2a + \mu = 0 \quad -2a = 1 \quad a = -\frac{1}{2}$

$\frac{c}{a} = -\mu \quad -2 \times b = -\mu \rightarrow b = \frac{\mu}{2}$

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

① $f(x) - x = 3x - 2 - x = 2x - 2 \geq 0 \quad x \geq 1$

② $f(x) - x = 3x + \mu - x = x + \mu \geq 0 \quad x \geq -\mu \quad x < 1$

$D_f = [-\mu, 1) \cup [1, \infty)$

$= [-\mu, +\infty)$

$$f(u) = ru^r - ru$$

$$\sin \frac{\pi}{r} = \frac{\sqrt{r}}{r} \quad \cos 2\pi = 1$$

$$\frac{\sqrt{r}}{r} + 1 = \left(\frac{r + \sqrt{r}}{r} \right)$$

$$f(u) = r \left(\frac{r + \sqrt{r}}{r} \right)^r - r \left(\frac{r + \sqrt{r}}{r} \right) = \boxed{-\frac{1}{r}}$$

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

$$f(f(a)) = a \rightarrow \text{بجز بایک}$$

$$u \neq 1$$

$$Df = (-\infty, 1) \cup (1, +\infty)$$

$$f(g(a)) = -r \quad f(u) = -\varepsilon \quad \begin{aligned} u^r - ru &= -\varepsilon \\ u^r - ru + r &= (u-r)^r \\ u &= r \end{aligned}$$

$$g(a) = r \rightarrow u^r - 1 = r$$

$$\hookrightarrow a^r = r \rightarrow a = \pm \sqrt[r]{r}$$

$$f(\varepsilon) \rightarrow u + r = \varepsilon \rightarrow u = 1 \rightarrow 1 - r + r = r$$

$$f(-r) \rightarrow u + r = -r \rightarrow u = -r \rightarrow r^r + r^0 + r = \quad \checkmark r$$

$$f(\varepsilon) \times f(-r) = r \times \checkmark r = \boxed{1 \varepsilon \varepsilon}$$

$$r \cos^r u + a \cos^r u = r_1 a$$

$$r \cos^r u + a \cos^r u - r_1 a = 0$$

$$\tan^r u = \frac{\frac{1}{r}}{\frac{\sqrt{r}}{r}} = \left(\frac{\sqrt{r}}{r} \right)^r = \boxed{\frac{1}{r}}$$

$$\cos^r u + a \cos^r u - 1 \varepsilon = 0$$

$$(u+r)(u-r) \rightarrow \begin{cases} \cos u = -\frac{1}{\varepsilon} \alpha \\ \cos u = \frac{r}{\varepsilon} = \frac{1}{r} r \end{cases}$$

$$3- \log_{\epsilon} u^2 - u - 2 \rightarrow u^2 - u - 2 > 0 \rightarrow (u-2)(u+1) > 0 \quad \frac{-1 \pm 2}{+ \phi - \phi +} \rightarrow u > 2 \leq u < -1 \quad I$$

$$\sqrt{u^2 - 1} + 1 \rightarrow \text{هواره مثبت است} \rightarrow \sqrt{u^2 - 1} \rightarrow u^2 - 1 > 0 \rightarrow u \geq 1 \leq u \leq -1 \quad II$$

$$I, II \rightarrow u < -1, u > 2 \rightarrow D_f = (-\infty, -1) \cup (2, +\infty)$$