

۱۹، ۵ ازین

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

$$x(x-1) = 0 \Rightarrow x = 0 \text{ or } x = 1$$

$$1-2x = 0 \Rightarrow 1 = 2x \Rightarrow x = \frac{1}{2}$$

$$Df = (-\infty, 0) \cup (\frac{1}{2}, 1) \cup (1, \infty)$$

$$\frac{3}{x-1} + \frac{1}{x+2} = \frac{3x+4+x-1}{x^2-x-2} = \frac{4x+3}{x^2-x-2} \neq 0 \rightarrow \frac{-3}{x^2-x-2}$$

$$x \neq -1, x \neq 0, x \neq 1, x \neq -2$$

$$Df = \mathbb{R} \setminus \{-1, 0, 1, -2, -\frac{3}{2}\}$$

$$\frac{-x}{3-x^2} \left(\frac{3}{3-x^2} - \frac{2}{3-x^2} \right) \geq 0$$

$$\frac{-x}{3-x^2} \geq 0$$

$$-x \geq 0 \Rightarrow x \leq 0$$

$$3-x^2 \neq 0 \Rightarrow x \neq \pm \sqrt{3}$$

$$\sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow y+1 = (3 - \sqrt{x-1})^2$$

$$y = (3 - \sqrt{x-1})^2 - 1$$

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

$$3 - \sqrt{x-1} \geq 0 \rightarrow \sqrt{x-1} \leq 3 \rightarrow x-1 \leq 9 \rightarrow x \leq 10$$

$$Df = [1, 10]$$

$$Df = (-\infty, -2] \cup [\frac{3}{2}, +\infty)$$

$$x^2 - x - 2 \geq 0 \rightarrow (x-2)(x+1) \geq 0$$

$$x^2 - 1 \geq 0 \rightarrow (x-1)(x+1) \geq 0$$

$$\sqrt{x^2-1} \neq 1$$

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

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

$$Df = (-\infty, -1) \cup (2, +\infty)$$

$$3 - 2a - 4 = 0 \rightarrow -1 = 2a \rightarrow a = -\frac{1}{2}$$

$$3 - \frac{1}{2}x - x^2 = 0 \rightarrow -x^2 - \frac{1}{2}x + 3 = 0$$

$$(x+2)(-x+\frac{3}{2}) = 0 \rightarrow x = -2 \text{ or } x = \frac{3}{2}$$

$$Df = (-\infty, -2] \cup [\frac{3}{2}, +\infty)$$

$$\sqrt{2x-5} \quad x \geq \frac{5}{2}$$

$$\sqrt{x+3} \quad x < 1$$

$$x \geq -3$$

$$-3 \leq x < 1$$

$$\sin \frac{\pi}{4} + \cos 2\pi = \frac{\sqrt{2}}{2} + 1 = \frac{2+\sqrt{2}}{2}$$

$$\frac{2+\sqrt{2}}{2} - 4 \times \frac{2+\sqrt{2}}{2} = \frac{2+\sqrt{2}}{2} - 4(2+\sqrt{2}) = \frac{2+\sqrt{2}}{2} - 8 - 4\sqrt{2} = \frac{2+\sqrt{2}-16-8\sqrt{2}}{2} = \frac{-14-7\sqrt{2}}{2}$$

$$\frac{x+1}{x-1} = a \rightarrow x+1 = ax - a \rightarrow x - ax = -a - 1 \rightarrow x(1-a) = -a-1 \quad (V)$$

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

$$\frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{\frac{a+1+a-1}{a-1}}{\frac{a+1-a+1}{a-1}} = \frac{2a}{2} = a \rightarrow R \rightarrow PF = R - \{1\}$$

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

$$a-1 \neq 0 \rightarrow a \neq 1$$

$$\sqrt{a^r - 1} \rightarrow (\sqrt{a^r - 1})^r - r (\sqrt{a^r - 1}) = -r$$

$$a^r - 1 - r\sqrt{a^r - 1} = -r \rightarrow a^r + r = r\sqrt{a^r - 1}$$

$$-a^{\frac{r}{2}} + 10a^{\frac{r}{2}} - r\omega = 0 \rightarrow a^{\frac{r}{2}} - 10a^{\frac{r}{2}} + r\omega = 0$$

$$a^{\frac{r}{2}} + 9 + 4a^{\frac{r}{2}} = 14a^{\frac{r}{2}} - 14$$

$$a^r = t \rightarrow t^r - 10t + r\omega = 0 \rightarrow (t - \omega)^r = 0 \rightarrow t = \omega$$

$$a = \pm \sqrt{\omega}$$

$$f(r) \rightarrow r = x + r \rightarrow x = 1 \rightarrow 1 - \omega + 4 = r$$

$$f(-r) \rightarrow x + r = -r \rightarrow x = -4 \rightarrow 4 + r + 4 = -r$$

$$r \cos^r + \omega \cos = r\omega \rightarrow r \cos^r + \omega \cos - r\omega = 0 \rightarrow \cos^r x + \omega \cos x - 1r = 0$$

$$\cos x = \frac{-\sqrt{r}}{r} \text{ , } \frac{r}{r}$$

$$(\cos x + \sqrt{r})(\cos x - \sqrt{r}) = 0$$

$$-1 < \cos x < 1 \rightarrow \cos x = \frac{1}{r}$$

$$\tanh^r x = \frac{1}{\cos^r x} - 1 \rightarrow \frac{1}{\frac{1}{r}} = r - 1 = r$$

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

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

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

$$f(u) = u^r - \epsilon u = u^r - \epsilon u + r - r = r(u^r - \epsilon u + 1) - r = r(u-1)^r - r \quad -4$$

$$\sin \frac{\pi}{\epsilon} + \cos \frac{\pi}{\epsilon} = \sqrt{\frac{\epsilon}{r}} + 1 \rightarrow f(\sqrt{\frac{\epsilon}{r}} + 1) = r(\sqrt{\frac{\epsilon}{r}} + 1 - 1)^r - r = r(\frac{\sqrt{\epsilon}}{\epsilon}) - r = -\frac{1}{r}$$