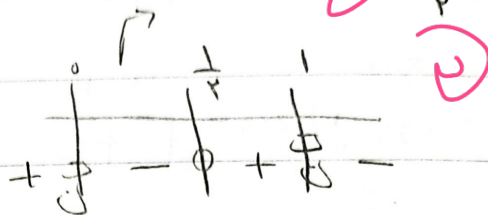


الف - $f(x) = \frac{\sqrt{(x-1)^2 - x^2}}{x(x-1)}$ $Df = (-\infty, 0) \cup [\frac{1}{4}, 1)$ -1

$$\frac{1-x}{x(x-1)} \geq 0$$



ب. $\frac{1}{x+1} - \frac{1}{x} = \frac{x-1(x+1)}{x(x+1)} = \frac{-1-x}{x(x+1)}$
 $x \neq 0, x+1 \neq 0$

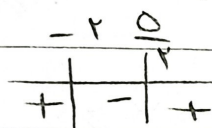
$$\frac{1}{x-1} + \frac{1}{x+2} = \frac{x+3}{(x+2)(x-1)}$$

$$\begin{aligned} x+2 &\neq 0 \\ x+3 &\neq 0 \\ x-1 &\neq 0 \end{aligned}$$

$$Df = \mathbb{R} - \left\{ -\frac{5}{2}, -1, 0, 1 \right\}$$

الف) $\left(\left(\frac{1}{3}\right)^x - 9\right)(3^x - 8^x) \geq 0 \rightarrow \left(\frac{1}{3}\right)^x = 9$ -2

$$3^x = 3^2 \rightarrow x = 2$$



$$Df = (-\infty, -2] \cup \left[\frac{5}{2}, +\infty\right)$$

ب) $x > 1 \rightarrow x > 1, \sqrt{y+1} = 3 - \sqrt{x-1}$

$$3 - \sqrt{x-1} \geq 0$$

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

$$x \leq 10$$

اشتراک
مست

$$Df = [1, 10]$$

$$\begin{aligned} (x-5)(x+1) &> 0 \\ (x-1)(x+1) &> 0 \end{aligned}$$

$$\begin{aligned} & \begin{array}{c} -1 \quad 5 \\ + \quad - \quad + \end{array} \\ & \begin{array}{c} -1 \quad 1 \\ + \quad - \quad + \end{array} \end{aligned}$$

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

مخرج صفر

$$f(x) = \sqrt{3+ax-x^2} \rightarrow 3+ax-x^2 \geq 0$$

$$\frac{c}{a} = -3 = -2b \rightarrow b = \frac{3}{2}$$

$$\frac{d}{a} = -b = a = -2 + \frac{3}{2} = -\frac{1}{2}$$

$$a+b = \frac{3}{2} - \frac{1}{2} = 1$$

$$f(x) - x \geq 0$$

$$x \geq 1 \rightarrow 3x - 2 - x \geq 0 \rightarrow 2x \geq 2 \rightarrow x \geq 1 \rightarrow [1, +\infty)$$

$$x < 1 \rightarrow 2x - x + 3 \geq 0 \rightarrow x \geq -3 \rightarrow [-3, 1)$$

$$D_f = [-3, +\infty)$$

$$\begin{aligned} \sin \frac{2\pi}{3} &= \frac{\sqrt{3}}{2} \\ \cos^2 \pi &= 1 \end{aligned} \rightarrow \sin^2 \frac{2\pi}{3} + \cos^2 \pi = 1 + \frac{\sqrt{3}}{2}$$

$$\begin{aligned} \psi(x) &= 2x^2 - \varepsilon x \rightarrow 2(1 + \frac{\sqrt{3}}{2})^2 - \varepsilon(1 + \frac{\sqrt{3}}{2}) = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} \\ &= \frac{\sqrt{3}}{2} - \frac{\varepsilon}{2} = \frac{1}{2} \end{aligned}$$

$$Df = R - f_1$$

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

$$f(x) = x^2 - \varepsilon x$$

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

$$f(g(a)) = -\varepsilon$$

$$g(a) = t \rightarrow f(t) = t^2 - \varepsilon t = -\varepsilon$$

$$(t - \varepsilon)^2 = 0 \rightarrow t = \varepsilon$$

$$f(x+y) = x^2 - \varepsilon x + y$$

$$f(\varepsilon) f(-\varepsilon)$$

$$x=1 \rightarrow f(\varepsilon) = 1 + \varepsilon - \varepsilon = 1$$

$$x=-4 \rightarrow f(-\varepsilon) = 16 + 4 + \varepsilon = 20 + \varepsilon$$

$$f(\varepsilon \cos x + 0 \cos x) = \tan^2 x \quad \cos^2 x = m$$

$$f(x/\omega) = \varepsilon \cos^2 x + 0 \cos x = \frac{V}{\omega} \rightarrow \varepsilon \cos^2 x + 0 \cos x = \frac{V}{\omega}$$

$$\cos x = \frac{1}{\sqrt{2}} \rightarrow x = 45^\circ$$

$$\tan^2 45^\circ = (\sqrt{2})^2 = 2$$

$$m = \frac{\varepsilon}{\omega} = \frac{1}{\sqrt{2}}$$

$$m = \left(\frac{-V}{\varepsilon} \right) \cos x$$