

$$f(x) = \sqrt{(a-x)x^2 + ax + b} \quad a-x \geq 0 \quad a=x \quad x^2 + b \geq 0 \quad \checkmark \quad [-3, +\infty) \quad \text{b} \quad \textcircled{1}$$

$$x(-x) + b = 0 \quad \checkmark \quad b = -9$$

2

2. افترض

$$f(x) = \sqrt{x^2 + 2x + 1 + m^2} \quad \mathbb{R} \quad \Delta \leq 0 \quad b^2 - 4ac$$

$$f = \varepsilon x + (1 - m^2)$$

$$\varepsilon = -1 + \varepsilon m^2 \quad \varepsilon = -2 + \varepsilon m^2 \quad (-1 + m^2) \quad \textcircled{2}$$

$$1 - (-1) = +2 \quad \text{موجب}$$

2

$$f = \varepsilon x + (1 - m^2) < 0$$

$$f = -1 + \varepsilon m^2 < 0$$

$$\varepsilon m^2 - \varepsilon < 0$$

$$m^2 - 1 < 0$$

$$m^2 < 1$$

$$-1 \leq m \leq +1$$

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

$$x_1 = 0 \quad \checkmark \quad \mathbb{R} \rightarrow x = -1 \quad \cup$$

$$x - x^2 \geq 0 \quad \varepsilon \geq x^2 \quad -2 \leq x \leq 2 \quad \textcircled{3}$$

$$D_f = \{x, -1, 0, 1, 2\}$$

2

موجب

$$g(x) = \sqrt{x^2 + 1} \quad x^2 (x+1) \geq 0$$

$$x \geq -1 \quad \checkmark \quad D_f = [-1, +\infty) \quad \textcircled{4}$$

$$y = \sqrt{\frac{(x^2-1)(x^2-4x^2)}{x^2-1}} \Rightarrow 0 \quad \frac{(x-1)(x+1)x^2(x-2)}{(x-1)(x^2-x+1)} \geq 0$$

2

$$x \geq -1 \quad \checkmark \quad D_f = [-1, +\infty) \quad \textcircled{4}$$

$$D_f = [-2, -1] \cup [2, +\infty) \cup \{0\}$$

$$g(x) = \sqrt{|x-1|-x^2} \geq 0$$

$$|x-1| \geq x^2$$

موجب

$$x^2 - 2x + \varepsilon \geq 0 \quad x^2 - \varepsilon x - \omega \geq 0$$

-2

$$x^2 - \varepsilon x - \omega \geq 0 \quad \textcircled{5}$$

$$(x+1)(x-\omega) \geq 0$$

$$x \geq -1 \quad \checkmark \quad D_f = (-\infty, -1] \cup [\omega, +\infty)$$

$$(-\infty, -1] \cup [\omega, +\infty)$$

$$y = \sqrt{x - |x-1|} \geq 0$$

$$x - |x-1| \geq 0$$

$$x \geq |x-1|$$

$$-2 \leq x-1 \leq 2$$

$$-4 \leq x-1 \leq 4 \quad -2 \leq x \leq 4$$

$$D_f = [-2, 4] \quad \textcircled{6}$$

2

$$g(x) = \sqrt{1-x|x|} \geq 0$$

$$x|x| \leq 1$$

$$x \leq 1$$

$$D_f = (-\infty, 1) \quad \textcircled{7}$$

$$x \geq 0 \quad x^2 \leq 1 \quad 0 \leq x \leq 1$$

$$1 - x|x|$$

$$+1+1$$

$$0 \quad 0$$

$$x \leq 0 \quad -x^2 \leq 1 \quad x^2 \leq 1$$

$$x^2 \leq 1 \quad \checkmark$$

PITICO

ماتبا فكري

$$y = \frac{1}{\sqrt{x^2 - |x-1| - 1}} > 0$$

$$x^2 - |x-1| > 0 \quad x > |x-1| \quad -x \leq x-1 \leq x$$

$$x \leq x \leq 1$$

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

$$x^2 - |x-1| \neq 1 \Rightarrow x^2 - x + 1 \neq 1 \Rightarrow x(x-1) \neq 0 \Rightarrow x \neq 0, x \neq 1$$

$$D_f = \mathbb{R} \setminus \{0, 1\}$$



(1)

$$y = \frac{\sin^2 x - 1}{\cos x}$$

$$\cos x \neq 0$$

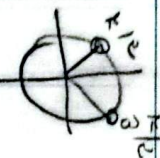
$$D_f = \mathbb{R} \setminus \{k\pi + \frac{\pi}{2}\}$$

$$y = \frac{\cos x}{x \cos x - 1}$$

$$x \cos x - 1 \neq 0$$

$$x \cos x \neq 1$$

$$\cos x \neq \frac{1}{x}$$



$$D_f = \mathbb{R} \setminus \{k\pi \pm \frac{\pi}{2}\}$$

$$y = \frac{x^2 + p}{|x+1| - |x+p|}$$

$$|x+1| - |x+p| \neq 0$$

$$|x+1| \neq |x+p|$$

$$x^2 + px + 1 \neq x^2 + 4x + 4 \Rightarrow px - 2x - 3 \neq 0$$

$$x^2 - 2x - 3 \neq 0 \Rightarrow (x-4)(x+1) \neq 0 \Rightarrow x \neq 4, x \neq -1$$

$$D_f = \mathbb{R} \setminus \{4, -1\}$$

$$y = \sqrt{|x+1| - |x+p|} > 0 \Rightarrow |x+1| > |x+p|$$

$$x^2 + 2x + 1 < x^2 + 4x + 4 \Rightarrow 2x + 1 < 4x + 4 \Rightarrow -2x < 3 \Rightarrow x > -\frac{3}{2}$$

$$x^2 - 2x - 3 > 0 \Rightarrow (x-4)(x+1) > 0 \Rightarrow x < -1 \text{ or } x > 4$$

$$D_f = (-\infty, -\frac{3}{2}) \cup [4, +\infty)$$

$$f(x) = \sqrt{\log_{\frac{1}{e}}(\log_{\frac{1}{e}}(x-1))}$$

$$\log_{\frac{1}{e}}(x-1) > 0 \Rightarrow x-1 > 1 \Rightarrow x > 2$$

$$\log_{\frac{1}{e}}(x-1) > 0 \Rightarrow x-1 > 1 \Rightarrow x > 2$$

$$\log_{\frac{1}{e}}(x-1) > 0 \Rightarrow x-1 > 1 \Rightarrow x > 2$$

$$D_f = (2, +\infty)$$

PITICO

Date:

Sub:

$$\text{a) } y = \log(r \cos \alpha + 1) \quad r \cos \alpha + 1 > 0 \quad r \cos \alpha > -1 \quad \cos \alpha > -\frac{1}{r} \quad (10)$$

$$D_f = (r\pi - \frac{\pi}{r}, r\pi + \frac{\pi}{r})$$



$$\text{b) } y = \sqrt{\log \frac{x-1}{x+1}} \quad \frac{x-1}{x+1} > 0 \quad \frac{x-1}{x+1} > 1 \quad \frac{x-1}{x+1} - 1 > 0 \quad \frac{x-x-1-1}{x+1} > 0 \quad D_f = (-\infty, -1) \cup (1, +\infty) \quad (1)$$

$$\text{c) } \log \frac{x-1}{x+1} > 0 \quad \frac{x-1}{x+1} > 1 \quad \frac{x-1}{x+1} - 1 > 0 \quad \frac{x-x-1-1}{x+1} > 0$$

$$\frac{-2}{x+1} > 0 \quad x < -1 \quad (-\infty, -1) \quad (2)$$

المجال (2)

المجال (1) هو المجال (2) مع العكس

$$D_f = \mathbb{R} \rightarrow (-\infty, -1)$$

المجال (2)