

Subject:

تعاريف

استعاره

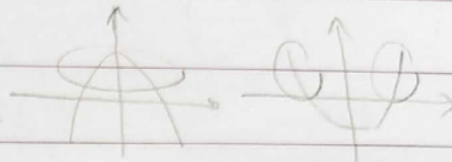
Date:

$$f(x) = \sqrt{(a-1)x^2 + ax + b} \geq 0 \quad D_f = [0, +\infty) \quad \text{ارزشهای مثبت و صفر را میگیریم} \quad (1)$$

$$a-1 \geq 0 \quad a \geq 1$$

$$x \geq b \geq 0$$

مجموعه جوابها را میگیریم



$$x \geq -\frac{b}{a-1} \quad \boxed{b \geq 0}$$

$$f(x) = \sqrt{x^2 + 2x + m} \geq 0 \quad D_f = \mathbb{R} \quad a=1, \Delta \leq 0 \quad (2)$$

همیشه در زیر رادیکال صفر است

$$1 - 4 + 4m \leq 0$$

$$\boxed{1 - (-1) = 2}$$

$$m \leq 1$$

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

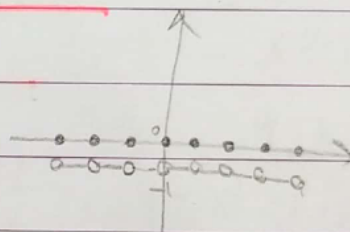
min max

$$f(x) = \sqrt{4 - x^2} \geq 0 \quad x \leq 2 \rightarrow -2 \leq x \leq 2$$

$$[x] + [-x] + 1 \neq 0 \quad [x] + [-x] \neq -1$$

$$-2 \leq x \leq 2 \quad \cap \quad x \in \mathbb{Z}$$

$$x = \{-2, -1, 0, 1, 2\} \rightarrow \boxed{x \in \mathbb{Z} \cap [-2, 2]}$$



$$\text{الف)} \quad y = \sqrt{x^3 + 4x^2} \geq 0 \quad x(x+4) \geq 0 \quad \frac{-4}{-1} \quad \frac{0}{0} \quad \frac{+}{+} \quad D_f = [-4, +\infty) \quad (3)$$

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

$$D_{g_2} = (-\infty, -1] \cup [0, +\infty) \cup \{0\}$$

$$\text{الف)} \quad y = \sqrt{|x-2|} \geq 0 \quad |x-2| \geq 0 \quad x-2 \geq 0 \quad x-2 \leq 0 \quad (4)$$

$$x \geq 0 \cup x \leq -1 \quad D_f = (-\infty, -1] \cup [0, +\infty)$$

$$\text{ب)} \quad y = \sqrt{4 - |x-2|} \geq 0 \quad |x-2| \leq 4 - 4 \leq x-2 \leq 4 - 4 \leq 0 \quad -5 \leq x \leq 9$$

$$\boxed{D_g = [-5, 9]}$$

(الف) $y = \sqrt{1-x|x|} \geq 0$. $x|x| \leq 1 \Rightarrow x \leq 1$ $D_f = (-\infty, 1]$ (9)

(ب) $y = \frac{1}{\sqrt{3-|x-5|} - 1} \neq 0$. $\sqrt{3-|x-5|} \neq 1 \Rightarrow 3-|x-5| \neq 1 \Rightarrow |x-5| \neq 2$
 $|x-5| < 2 \Rightarrow 3 < x-5 < 7 \Rightarrow 8 < x < 12$
 $|x-5| > 2 \Rightarrow x-5 < -2 \Rightarrow x < 3$
 $D_f = [1, 1] \cup [3, 12]$ (10)

(الف) $y = \frac{\sin x - 1}{\cos x} \neq 0$. $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$ (11)

(ب) $y = \frac{\cos x}{2\cos x - 1} \neq 0$. $\cos x \neq \frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}\}$ (12)

(الف) $y = \frac{x+3}{|x+1| - |x+3|} \neq 0$. $|x+1| \neq |x+3|$
 $x^2+2x+1 \neq x^2+6x+9 \Rightarrow 4x \neq -8 \Rightarrow x \neq -2$
 $D_f = \mathbb{R} - \{-2\}$ (13)

(ب) $y = \sqrt{|2x+1| - |x+3|} \geq 0$. $|2x+1| \geq |x+3|$
 $x^2+4x+1 \geq x^2+6x+9 \Rightarrow 4x-6 \geq 8 \Rightarrow 4x \geq 14 \Rightarrow x \geq \frac{7}{2}$
 $D_f = [\frac{7}{2}, +\infty)$ (14)

$f(x) = \sqrt{\log_{10} \log_{10} (x-1)} \geq 0$. $x > \frac{1}{10}$. $\log_{10} (x-1) \geq 0 \Rightarrow x-1 \geq 1 \Rightarrow x \geq 2$ (15)

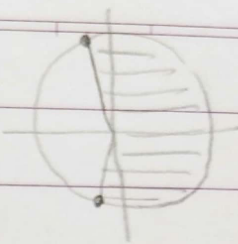
$\log_{10} \log_{10} (x-1) \geq 0$. $\log_{10} (x-1) \leq 1 \Rightarrow x-1 \leq 10 \Rightarrow x \leq 11$ $D_f = [2, 11]$

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الف) $y = \log(x \cos x + 1) > 0 \Rightarrow \cos x > \frac{1}{x}$

$$Df = \left(2K\pi - \frac{\pi}{\mu}, 2K\pi + \frac{\pi}{\mu} \right)$$



(16)

ب) $y = \log \frac{x-1}{x+1} > 0 \Rightarrow \frac{x-1}{x+1} > 0$

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

$$Dy = (-\infty, -1)$$

$$\log \frac{x-1}{x+1} > 0 \Rightarrow \frac{x-1}{x+1} > 1 \Rightarrow \frac{x-1-x-1}{x+1} > 0 \Rightarrow \frac{-2}{x+1} > 0 \Rightarrow x < -1$$