

بسیار مهم به شما یاد می‌دهد که چگونه نمودار یک تابع را تغییر دهیم

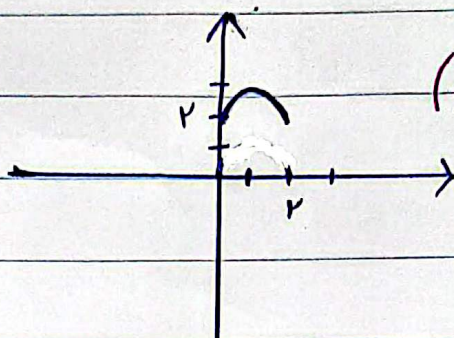
۱۸، ۷۵

هم C دخت

سپه آرمینا ایران پور

$$f(x) + 2$$

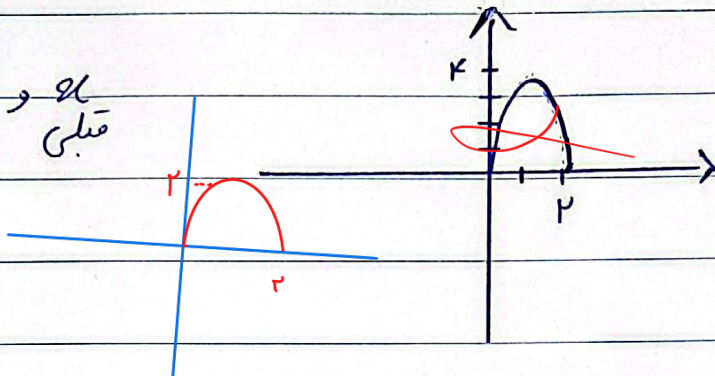
رو به بالا



(الف)

$$2f(x) \Rightarrow 2y$$

مقیاس

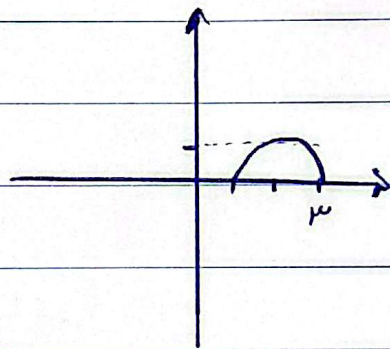


(ب)

۱، ۵

$$f(x-1)$$

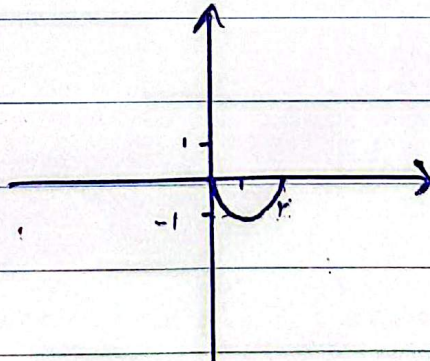
مست راست



(ج)

$$-f(x)$$

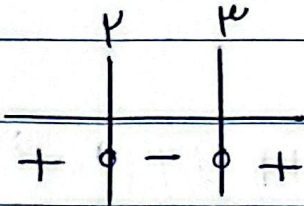
قرینه



(د)

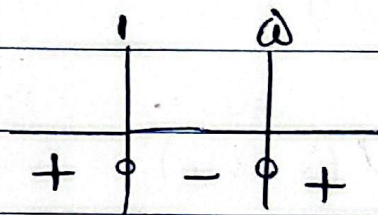
$$(الف) x^2 - 5x + 4 > 0 \Rightarrow (x - 2)(x - 4) \quad (12)$$

فقط مثبت ها
من ریشه دار
نظریه کسیر



$$\Rightarrow (-\infty, 2) \cup (4, +\infty)$$

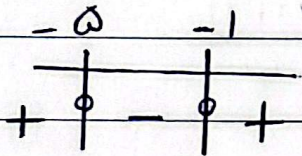
$$(ب) x^2 - 4x + 5 < 0 \Rightarrow (x - 1)(x - 5)$$



$$\Rightarrow (1, 5)$$

عبارت فقط مثبت ها را
می خواهد پس ریشه دار نظریه کسیر

$$(ج) x^2 + 4x + 5 > 0 \Rightarrow (x + 1)(x + 5)$$



$$\Rightarrow (-\infty, -5] \cup [-1, +\infty)$$

(2)

$$(د) x^2 - 7x + 4 < 0 \Rightarrow (x - 1)(x - 4)$$



$$\Rightarrow [1, 4]$$

$$\text{الف) } \frac{x^2 - 4x + 4}{x - \omega} < 0 \Rightarrow \frac{(x-1)(x-2)}{x - \omega} \quad (14)$$

$$\begin{array}{c} 1 \quad 2 \quad \omega \\ | \quad | \quad | \\ - \quad + \quad - \quad + \\ \circ \quad \circ \quad \circ \end{array} \Rightarrow (-\infty, 1) \cup (2, \omega)$$

(2) ✓

$$\text{ب) } \frac{x^2 - 1}{x^2 - 4x + \omega} > 0 \Rightarrow \frac{(x-1)(x+1)}{(x-1)(x-\omega)}$$

$$\begin{array}{c} -1 \quad 1 \quad \omega \\ | \quad | \quad | \\ + \quad - \quad - \quad + \\ \circ \quad \circ \quad \circ \end{array} \Rightarrow (-\infty, -1] \cup (\omega, +\infty)$$

$$\text{الف) } y = \sqrt{\frac{x^2 - 1}{x^2 - x}} \Rightarrow \frac{(x-1)(x+1)}{x(x-1)(x+1)} > 0 \quad (15)$$

$$\begin{array}{c} -1 \quad 0 \quad 1 \quad \omega \\ | \quad | \quad | \quad | \\ + \quad - \quad + \quad - \quad + \\ \circ \quad \circ \quad \circ \quad \circ \end{array} \Rightarrow (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$$

(2) ✓

$$\text{ب) } y = \sqrt{\frac{x^2 - 19}{x^2 - \omega x + k}} \Rightarrow \frac{(x-k)(x+k)}{(x-1)(x-k)} > 0$$

$$\begin{array}{c} -k \quad 1 \quad k \\ | \quad | \quad | \\ + \quad - \quad + \quad + \\ \circ \quad \circ \quad \circ \end{array} \Rightarrow (-\infty, -k] \cup (1, k) \cup (k, +\infty)$$

الف) $y = \sqrt{K - \sqrt{K - a}}$

(1)

$$K - \sqrt{K - a} \geq 0 \Rightarrow K \geq \sqrt{K - a} \Rightarrow K^2 \geq K - a$$

$$\Rightarrow K \geq -a$$

$$K - a \geq 0 \Rightarrow K \geq a \Rightarrow a \leq K$$

$$\Rightarrow a \geq -K$$

$$\Rightarrow a \leq K \text{ و } a \geq -K \Rightarrow [-K, K]$$

ب) $y = \sqrt{K - \sqrt{a - K}}$

(2)

$$K - \sqrt{a - K} \geq 0 \Rightarrow K \geq \sqrt{a - K} \Rightarrow K^2 \geq a - K \Rightarrow$$

$$K^2 + K \geq a \Rightarrow a \leq K^2 + K$$

$$a - K \geq 0 \Rightarrow a \geq K$$

$$a \leq K^2 + K \text{ و } a \geq K \Rightarrow [K, K^2 + K]$$

الف) $y = \sqrt{K - \sqrt{a}^K} \Rightarrow K - \sqrt{a}^K \geq 0 \Rightarrow K \geq \sqrt{a}^K$ (3)

$$K \geq \sqrt{a}^K$$

$$\sqrt{K} \geq \sqrt{a} \Rightarrow a \leq K$$

$$a \geq -K$$

$$\Rightarrow [-K, K]$$

(2)

ب) $y = \sqrt{K|a| - a} \Rightarrow K|a| - a \geq 0 \Rightarrow K|a| \geq a$

$$(-\infty, -K]$$

$$\cup [K, +\infty)$$

$$a \leq -K \text{ و } a \geq K \Leftrightarrow |a| \geq K$$

SEVIL

$$\text{الف) } y = \mu \frac{\sqrt{|a|+1}}{\sqrt{|a|-\mu}} \Rightarrow |a| \neq \mu \Rightarrow a \neq \pm \mu \quad (\vee)$$

$$D_f = \mathbb{R} - \{\pm \mu\}$$

$$\text{ب) } y = \mu \frac{\sqrt{a}+1}{\sqrt{a}-\mu} \Rightarrow \begin{cases} a \geq 0 \\ \sqrt{a} \neq \mu = a \neq 9 \end{cases}$$

(✓) ✓

$$D_f = [0, +\infty) - \{9\}$$

$$\text{الف) } y = \frac{\sin a}{\mu \cos a - 1} \Rightarrow \mu \cos a \neq 1 \quad (\wedge)$$

$$\cos a \neq \frac{1}{\mu}$$

$\wedge$
 $\begin{matrix} \nearrow & \searrow \\ \mu_0 & \mu_{\infty} \end{matrix}$

$$D_f = \mathbb{R} - \left\{ \mu k\pi \pm \frac{\pi}{\mu} \right\}$$

$$ب) y = \frac{\cos u + 1}{r \sin u + 1} \Rightarrow r \sin u \neq -1 \quad (A)$$

$$\sin u \neq -\frac{1}{r}$$

$$\sin u \neq \pi, 3\pi, \dots$$

$$D_f = \mathbb{R} - \left\{ \left\{ r k \pi - \frac{\pi}{r} \right\}, \left\{ r k \pi + \frac{\pi}{r} \right\} \right\}$$

$$ج) y = \frac{\frac{\sin}{\cos} u + r}{\cot u - 1} \Rightarrow \cot u \neq 1 \Rightarrow \cos \neq \sin$$

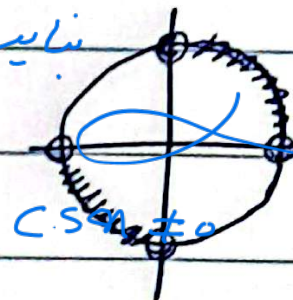
$$u \neq k\pi$$

$$u \neq k\pi + \frac{\pi}{r}$$

$$u \neq k\pi + \frac{\pi}{r}$$

$$\cos \neq 0$$

$$\sin \neq 0$$



$$\cos u \neq 0$$

$$u \neq k\pi + \frac{\pi}{r}$$

$$\sin u \neq 0$$

$$u \neq k\pi$$

$$\cot u \neq 1$$

$$u \neq k\pi + \frac{\pi}{r}$$

$$D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{r} \right\}$$

$$R - \left\{ \frac{k\pi}{r}, k\pi + \frac{\pi}{r} \right\}$$

SEVIL

$$1) y = \frac{\sin \alpha + 1}{K \sin \alpha - K} \Rightarrow K \sin \alpha \neq K$$

$$\sin \alpha \neq \frac{K}{K}$$

$$\sin \alpha \neq \frac{K}{K}$$

$$\sin \alpha \neq 1, K \neq 0, K \neq \infty$$

$\mathcal{D} =$

$$\mathbb{R} - \left\{ K\pi \pm \frac{\pi}{K} \right\}$$

$$y = \frac{1}{\sqrt{p|a-p| - \frac{1}{p}}} \Rightarrow p|a-p| - \frac{1}{p} > 0 \quad (9)$$

$$p|a-p| > \frac{1}{p}$$

$$|a-p| > \frac{1}{p}$$

$$a-p > \frac{1}{p} \Rightarrow a > \frac{p+1}{p}$$

$$a-p < -\frac{1}{p} \Rightarrow a < \frac{p-1}{p}$$

② ✓

$$D_f = \left(-\infty, \frac{p-1}{p}\right) \cup \left(\frac{p+1}{p}, +\infty\right)$$

SEVIL

$$\text{الف) } y = \sqrt{K - r|a|}$$

(1.)

$$K - r|a| \geq 0 \Rightarrow K \geq r|a| \Rightarrow r \geq |a|$$

$$D_f = [-r, r]$$

Ⓟ

✓

$$|a| \leq r$$

$$\Leftrightarrow -r \leq a \leq r$$

$$\text{ب) } y = \sqrt{\frac{|a|}{|a|}} \Rightarrow \frac{|a|}{|a|} \geq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$$

$$|a| \neq 0 \Rightarrow a \neq 0$$