

19.18

بهره‌بردار

بازدید آقای ...
کلیف شماره ۳

$$y^3 - x = 2x^2 \xrightarrow{\text{تعیین}} y^3 = 2x^2 + x \rightarrow y^3 = y^3 \rightarrow y_1 = y_2 \checkmark$$

$$y^3 = 2x^2 + x \rightarrow y = 1 + 3 - (1)^3 \rightarrow |y| = 3 \rightarrow y = \pm 3 \checkmark$$

$$\sqrt{x-4} + |y-2| = 0 \rightarrow y = 2 \quad x = 4 \quad \text{جمع دو عدد مثبت صفر نیست}$$

$$x = \cos y \rightarrow x = 0 \rightarrow y = \left\{ k\pi + \frac{\pi}{2} \right\} \rightarrow 90^\circ, 270^\circ, \dots \checkmark$$

$$y = \frac{x+4}{x^2-4x} \quad D_f \Rightarrow x^2-4x \neq 0 \rightarrow x \neq \{0, 4\}$$

$$y = \frac{x+5}{x^2+4x+4} \quad D_f = \mathbb{R} - \{0, 4\}$$

$$y = \frac{x+5}{x^2+x+4} \rightarrow x^2+x+4 \neq 0 \quad \Delta = 1-16 = -15 < 0 \quad \text{ریشه ندارد}$$

$$y = \frac{x+4}{x^2-4x^2} \rightarrow x^2-4x^2 \neq 0 \rightarrow (x^2-4x)(x^2+4x) \neq 0$$

$$x^2-4x=0 \rightarrow x^2=4x \rightarrow x=4 \quad x=0$$

$$x^2+4x=0 \rightarrow x^2=-4x \quad x=-4$$

$$D_f = \mathbb{R} - \{0, 4, -4\}$$

$$y = \sqrt{9-x} + \sqrt{x-2} \quad x-2 \geq 0 \quad x \geq 2$$

$$9-x \geq 0 \rightarrow 9 \geq x \quad x \leq 9$$

$$D_f = [2, 9]$$

$$y = \frac{3x+1}{x^2+1} \quad x^2+1 \neq 0 \quad \text{همیشه مثبت}$$

$$D_f = \mathbb{R}$$

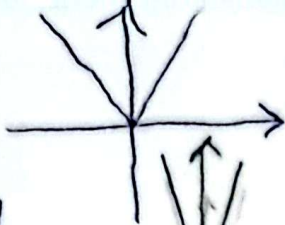
$$y = \frac{\sqrt{x-2}}{x+4} \quad x-2 \geq 0 \quad x \geq 2$$

$$D_f = [2, +\infty) - \{-4\}$$

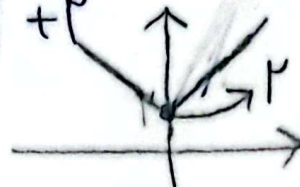
$$y = \frac{2x+3}{|x|+x^2} \quad \text{مخرج مثبت}$$

$$D_f = \mathbb{R}$$

$$y = |x|$$



$$y = |x| + 1$$

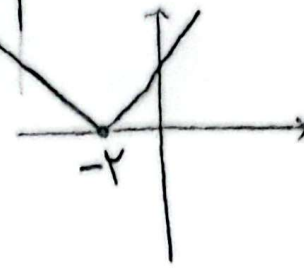


(K)

$$y = 1|x|$$

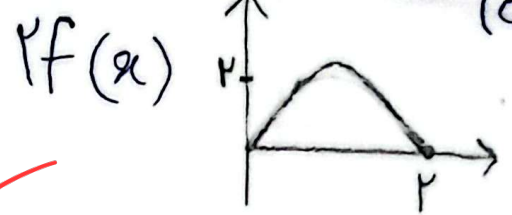
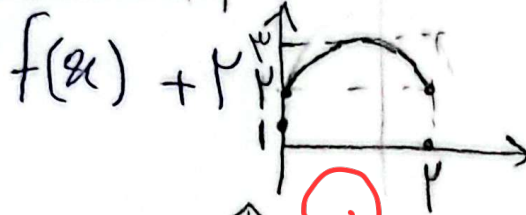
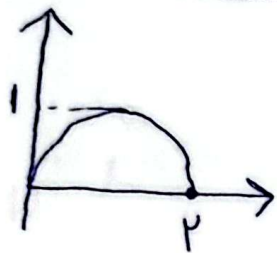
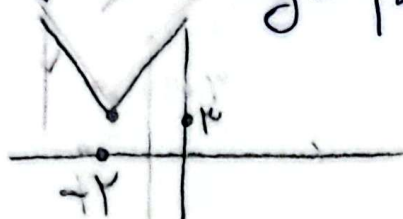


$$y = |x+1|$$

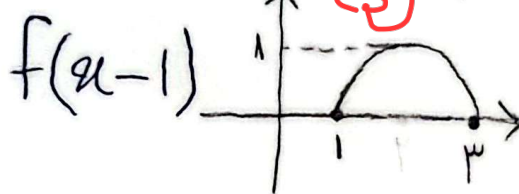


(P)

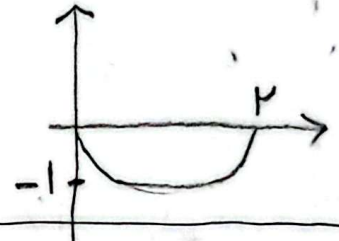
$$y = |x+1| + 1$$



(a)

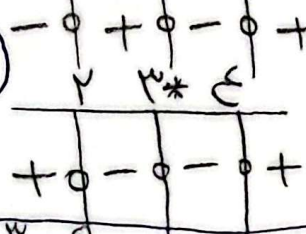


$$-f(x)$$



$$y = (x-1)(x-2)(x-3)$$

$$y = (x-1)(x-2)^2(x-3)$$



→ ملاحظات

(P)

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

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

$$y = \frac{x^3 - 4x^2 + 3x}{x^2 - 4x + 4} \rightarrow \frac{x^3 - 4x^2 + 3x}{(x-2)^2} \rightarrow (x-1)(x^2 + x - 2) \rightarrow (x-1)(x-1)(x+2)$$

(A)

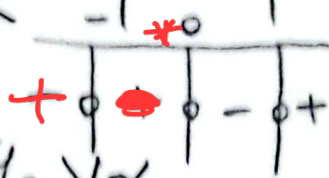
$$y = \frac{x^3 - 4x^2 + 3x}{x^2 - 4x + 4} = \frac{(x-1)(x-2)(x+2)}{(x-2)^2} = \frac{(x-1)(x+2)}{x-2}$$

(P)

$$y = \frac{x^3 - x^2}{x^2 - x} = \frac{(x^2 - x)(x + 1)}{x^2 - x} \rightarrow x^2(x + 1) \rightarrow x^2 = 1 \rightarrow x = \pm 1 \quad (9)$$

$$x^2 + x + 1 \rightarrow \Delta = 1 - 4 = -3 < 0 \quad x^2 = 0 \rightarrow x = 0$$

ریشه ندارد و دایره منفی می شود.



(1, 0)

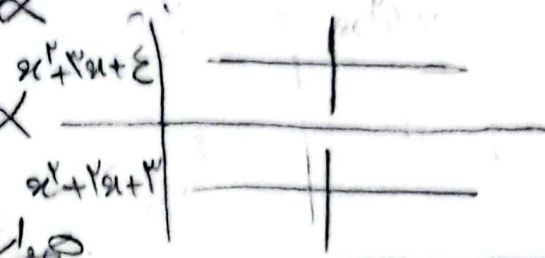
$$y = \frac{x^3 + 12x + 8}{x^2 + 12x + 12} \rightarrow \Delta = 9 - 144 = -135 < 0$$

صفر نمی شود.

$$x^2 + 12x + 12 \rightarrow \Delta = 144 - 48 = 96 > 0$$

صفر می شود.

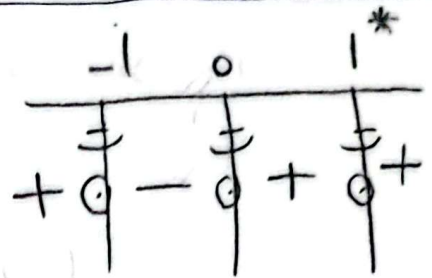
صفر می شود



$$y = \sqrt{\frac{x^3 - 1}{x^3 - x}} \rightarrow x^3 - 1 = 0 \rightarrow x = 1$$

$$x^3 - x \rightarrow x(x^2 - 1) = 0 \rightarrow x = 1, -1, 0$$

$$D_f = (-\infty, -1) \cup (0, +\infty) - \{1\}$$



$$y = \sqrt{\frac{x^2 - 16}{x^2 - 4x + 8}} \quad x^2 - 16 \rightarrow (x - 4)(x + 4) \rightarrow$$

ریشه ها 4 و -4

$$x^2 - 4x + 8 \neq 0 \rightarrow (x - 1)(x - 3) \neq 0$$

$$x \neq \{1, 3\}$$

با جدول تعیین علامت.

$$(-\infty, -4] \cup (1, +\infty) - \{3\}$$

