

19, 15

پریا احسن

$$-2 \leq \frac{3x+2}{\omega} \leq 2 \rightarrow -10 \leq 3x+2 \leq 20 \rightarrow -12 \leq 3x \leq 18 \rightarrow -4 \leq x \leq 6$$

1. (2)

$$D_{f\left(\frac{3x+2}{\omega}\right)} = [-4, 6] \checkmark$$

$$x \rightarrow [-2, 3]$$

$$3x-2 \begin{cases} \rightarrow x=-2 \rightarrow -4-2=-6 \\ \rightarrow x=3 \rightarrow 9-2=7 \end{cases}$$

$$D_f = [-6, 7] \checkmark$$

2. (2)

$$x \rightarrow [-1, 2)$$

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

$$\frac{x+1}{y} = \omega$$

$$[-1, \omega)$$

$$-1 \leq 2-\omega x < \omega \rightarrow -3 \leq -\omega x < 3$$

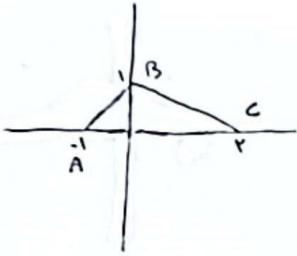
-3

(2)

$$\rightarrow \frac{x}{\omega} \geq x > -\frac{x}{\omega} \rightarrow D = \left(-\frac{x}{\omega}, \frac{x}{\omega}\right] \checkmark$$

$$A|_{-1} \quad B|_0 \quad C|_2$$

$\downarrow x_2+1$ (عكس)



$$A|_{-1} \quad B|_0 \quad C|_2 \longrightarrow A|_{-\frac{1}{3}} \quad B|_{-\frac{1}{3}} \quad C|_{\frac{1}{3}}$$

$\downarrow x_2+x_3$

$$A|_{-\frac{1}{3}} \quad B|_{-\frac{1}{3}} \quad C|_{\frac{1}{3}}$$



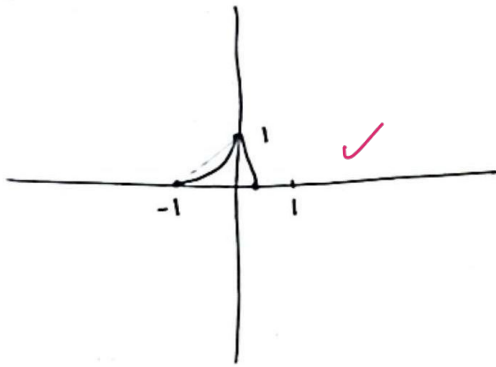
(2) - 15

$$A|_1 \quad B|_2 \quad C|_3$$

$$(x, y) \longrightarrow (x', y') = \left(\frac{x-2}{3}, \frac{y}{3} \right)$$

$$x - 2x' = 2 \Rightarrow 2x' = x - 2 \Rightarrow x' = \frac{x-2}{3}$$

$$y' = \frac{1}{3}y$$



$$A \rightarrow x' = \frac{1}{3}, y' = 0 \quad B \rightarrow x' = 0, y' = 1 \quad C \rightarrow x' = -1, y' = 0$$

$$A|_{\frac{1}{3}} \quad B|_0 \quad C|_{-1}$$

(2) - 15

$$y = -\frac{1}{3}x^2 + \frac{2}{3}x + 1 \rightarrow \frac{-b}{2a} = \frac{-\frac{2}{3}}{-\frac{2}{3}} = 1$$

$$a \rightarrow \text{تفسير في كذا} \rightarrow -\frac{1}{3}(x-1)^2 + 1$$

$$y = -\frac{1}{3}x^2 + \frac{2}{3}x + 1 = 1 \quad (2) - 15$$

$$\text{نفسه بالجدول} \rightarrow -\frac{1}{3}(x-1)^2 + 1 = 0 \rightarrow$$

$$-\frac{1}{3}(x-1)^2 = -1 \rightarrow (x-1)^2 = 3 \rightarrow x-1 = \pm\sqrt{3} \rightarrow$$

$$x-1 = \sqrt{3} \rightarrow x = 1+\sqrt{3}$$

$$x-1 = -\sqrt{3} \rightarrow x = 1-\sqrt{3}$$

$$2x' + 2 = x \rightarrow \frac{x-2}{2} = x'$$

$$y' = -2y + 1$$

$$\begin{array}{ccc} \begin{vmatrix} -1 \\ 0 \\ 1 \end{vmatrix} & \begin{vmatrix} 1 \\ 1 \\ -1 \end{vmatrix} & \begin{vmatrix} 3 \\ 0 \\ 1 \end{vmatrix} \\ \downarrow & \downarrow & \downarrow \\ \begin{vmatrix} -1 \\ 1 \\ 1 \end{vmatrix} & \begin{vmatrix} -\frac{1}{2} \\ 1 \\ -1 \end{vmatrix} & \begin{vmatrix} \frac{1}{2} \\ 1 \\ 1 \end{vmatrix} \\ \downarrow & & \\ \text{اس} & & \end{array}$$

$$\alpha/\beta = -\frac{1}{2} \times (-1) = \frac{1}{2}$$

-1
(2)

$$a < x-1 \leq 4 \rightarrow \underbrace{a+1 < x \leq 5}_{Df(x-1)}$$

$$-1 \leq x+1 < b \rightarrow \underbrace{-2 \leq x < b-1}_{Dg(x+1)}$$

$$\underbrace{(a+1, 5] \cap [2, b-1)}_{(-2, 5)} \begin{cases} \rightarrow b-1=5 \rightarrow b=6 \\ \rightarrow a+1=-2 \rightarrow a=-3 \end{cases} \rightarrow a-b = -3-6 = -9$$

$$-3 \leq x \leq 5 \rightarrow -\frac{3}{2} \leq \frac{x}{2} \leq \frac{5}{2} \rightarrow \underbrace{-\frac{1}{2} \leq \frac{x}{2} + 1 \leq \frac{3}{2}}_{Df(x)}$$

$$Rf(x) = [-1, 23]$$

-9
(15)

برای عبارت $\sqrt{|2f(x) - 3|}$ دامنه تعریف کنه (عملیات روی x انجام نشده)

$$D = [-\frac{1}{2}, \frac{3}{2}]$$

$$f(x) \in [-1, 23] \rightarrow 2f(x) \in [-2, 46] \rightarrow 2f(x) - 3 \in [-5, 43] \xrightarrow[\text{مطلق}]{\text{اعمال قدر}}$$

$$\text{بیشترین قدر} = 5 \xrightarrow{\text{رادیکال}} R = [0, \sqrt{5}]$$

$$\left| \frac{x+1}{x^2-3} \right| \xrightarrow[\text{جای } x \text{ می نه } x']{2} \left| \frac{x-1}{x^2-3} \right| \xrightarrow[\text{یک واحد به بالا}]{\text{یک واحد به بالا}} \left| \frac{x-1}{x^2-3} \right| + 1$$

-10
(2)

$$x + \left| \frac{x-1}{x^2-3} \right| + 1 < 0 \rightarrow \left| \frac{x-1}{x^2-3} \right| < \underbrace{-(x+1)}_{\text{منفی}} \xrightarrow{(\cdot)^2} \frac{(x-1)^2}{(x^2-3)^2} < (x+1)^2$$

$$(x-1)^2 < (x+1)^2 (x^2-3)^2$$

$$x+1 < 0 \rightarrow x < -1$$

$$(x-1)^2 < \underbrace{((x+1)(x^2-3))^2}_{x^2-2x-3} \rightarrow (x^2-2x-3)^2 - (x-1)^2 > 0$$

$$((x^2-2x-3) - (x-1))(x^2-2x-3 + (x-1)) > 0$$

$$(x^2-3x-2)(x^2-3) > 0$$

$$x(x^2-2x-1)(x^2-3) > 0$$

$$\begin{array}{ccccccc} -\sqrt{3} & \frac{-1+\sqrt{5}}{2} & \sqrt{3} & \frac{1+\sqrt{5}}{2} \\ + & - & + & - & + \end{array}$$

$$\frac{1+\sqrt{5}}{2} \leftarrow \pm \sqrt{3} \leftarrow x < -1 \rightarrow \text{پایه} = (-\infty, -\sqrt{3})$$

اشتهال