

$$-2 \leq \frac{3x+2}{\omega} \leq 2 \rightarrow -1 \leq 3x+2 \leq 1 \rightarrow -12 \leq 3x \leq 11 \rightarrow -6 \leq x \leq 7 \rightarrow D = [-6, 7]$$

۱

$$D_f = [f(-2), f(7)] = [-1, 7]$$

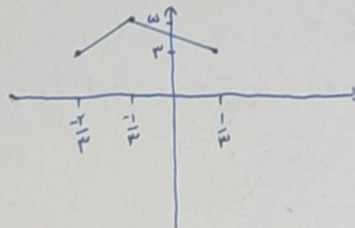
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$$D_f = \left[\frac{f(-1)+1}{2}, \frac{f(3)+1}{2} \right] = [-1, \infty) \Rightarrow -1 \leq 2-\omega x \leq \infty \rightarrow -3 \leq -\omega x \leq \infty \rightarrow \frac{3}{\omega} \leq x < \frac{\infty}{\omega}$$

$$\left[\frac{3}{\omega}, \frac{\infty}{\omega} \right]$$

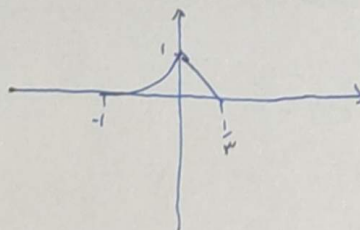
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$$-1 \leq 3x+1 \leq 2 \rightarrow -2 \leq 3x \leq 1 \rightarrow -\frac{2}{3} \leq x \leq \frac{1}{3} \rightarrow 3x+1=0 \rightarrow x = -\frac{1}{3}$$



۴

$$1 \leq 2-3x \leq \infty \rightarrow -1 \leq -3x \leq \infty \rightarrow \frac{1}{3} \geq x \geq -1/2-3x=2 \rightarrow -3x=0 \rightarrow x=0$$



۵

$\left \frac{x^2}{u} \right \rightarrow \frac{1}{u} \left(\frac{x}{u} \right)^2 + \frac{x}{u} \left(\frac{x}{u} \right) + 1 = \frac{x}{u}$ $\rightarrow \left(\frac{x}{u}, \frac{x}{u} \right) \rightarrow \left(3, \frac{x}{6} \right) \rightarrow \left(3, \frac{x}{6} \right) = \left(\frac{12}{6}, \frac{x}{6} \right) \rightarrow$ یعنی باید همیشه برابر بود که در این صورت شرطی که تغییر نمی‌کند $\rightarrow \frac{1}{u} (x-3)^2 + \varepsilon \rightarrow \frac{1}{u} (x-3)^2 + \varepsilon = 0 \rightarrow \frac{1}{u} (x-3)^2 = \varepsilon \rightarrow (x-3)^2 = 12 \Rightarrow x-3 = \pm 2\sqrt{3}$ $(2\sqrt{3}+3, 0), (2\sqrt{3}+3, \varepsilon)$	6
$x+y=1 \rightarrow x=\frac{1}{y}=\alpha, 1-y(\varepsilon)=v=\beta \rightarrow A\left(\frac{1}{\beta}, v\right) \Rightarrow \alpha\beta=\frac{1}{\beta}$	7
$x-1=\alpha \rightarrow x=\alpha+1, x+1=b \rightarrow x=b-1 \rightarrow (\alpha+1, \varepsilon) \cap [-1, b-1] = (-2, \omega)$ $\alpha+1=-2 \rightarrow \alpha=-3$ $\rightarrow a-b=-3-4=-9$ $b-1=\omega \rightarrow b=9$	8
$D_{y_1} = [-3, \omega] \rightarrow D_{f(x)} = \left[\frac{-3}{y}+1, \frac{\omega}{y}+1 \right] \Rightarrow \left[\frac{-1}{y}, \frac{y}{y} \right] \Rightarrow D_{y_1} = \left[\frac{-1}{y}, \frac{y}{y} \right]$ $R_{y_1} = [1, 2] \rightarrow$ ~~$-1 \leq f(x) \leq 2 \rightarrow -1 \leq \frac{x}{y} \leq 2 \rightarrow -y \leq x \leq 2y \rightarrow -y \leq x-3 \leq 2y-3 \rightarrow 0 \leq x-3 \leq 2y-3 \rightarrow 0 \leq \sqrt{12f(x)-3} \leq \sqrt{2\omega} \rightarrow R_{y_1} = [0, \sqrt{2\omega}]$~~	9
$\left \frac{(x-2)+1}{2(x-2)+1} \right = \left \frac{x-1}{2x-3} \right + 1 \rightarrow x+1 + \left \frac{x-1}{2x-3} \right < 0 \rightarrow x+1 < 0 \rightarrow x < -1 \rightarrow x+1 + \frac{x-1}{2x-3} < 0$ توجه این بازه درون قدر مطلق مثبت پس می‌توانیم $\rightarrow \frac{(x+1)(2x-3) + (x-1)}{2x-3} < 0 \rightarrow \frac{2x^2 + \varepsilon}{2x-3} < 0 \rightarrow (-\infty, -1)$ در بازه $x < -1$ کسر همیشه منفی است	10