



$$\text{الف) } f \cdot x^2 \geq 0 \Rightarrow x^2 \leq f \Rightarrow x^2 \leq r \Rightarrow -\sqrt{r} \leq x \leq \sqrt{r} \Rightarrow D_f = [-\sqrt{r}, \sqrt{r}]$$

$$\text{ب) } 3|x| - 9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow |x| \geq 3 \Rightarrow x \geq 3, x \leq -3 \Rightarrow \emptyset$$

$$\Rightarrow D_f = (-\infty, -3] \cup [3, +\infty)$$

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$$\text{الف) } |x| - r \neq 0 \Rightarrow |x| \neq r \Rightarrow x \neq \pm r \Rightarrow D_f = \mathbb{R} - \{\pm r\}$$

$$\text{ب) } \sqrt{x} - r \neq 0 \Rightarrow \sqrt{x} \neq r \Rightarrow x \neq 9 \text{ I } \left. \begin{array}{l} x \geq 0 \text{ II} \end{array} \right\} \Rightarrow D_f = [0, +\infty) - \{9\}$$

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$$\text{الف) } 2\cos x - 1 \neq 0 \Rightarrow 2\cos x \neq 1 \Rightarrow$$

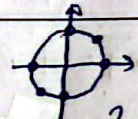
$$\Rightarrow \cos x \neq \frac{1}{2}$$



$$\Rightarrow D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3} \right\}$$

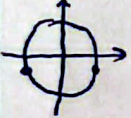
$$\text{ج) } \cot x \neq 1$$

$$\sin x \neq 0, \cos x \neq 0$$



$$\Rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{2} \right\}$$

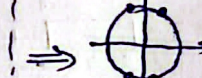
$$\text{ب) } 2\sin x \neq 1 \Rightarrow \sin x \neq \frac{1}{2}$$



$$\Rightarrow D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{6}, 2k\pi - \frac{5\pi}{6} \right\}$$

$$\text{د) } \sin^2 x \neq r \Rightarrow \sin^2 x \neq \frac{r}{r} \Rightarrow$$

$$\Rightarrow \sin x \neq \pm \frac{\sqrt{r}}{r} \Rightarrow$$



$$\Rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2} \right\}$$

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$$2|x-2| - \frac{1}{r} > 0 \Rightarrow 2|x-2| > \frac{1}{r} \Rightarrow |x-2| > \frac{1}{2r} \Rightarrow \begin{cases} x-2 > \frac{1}{2r} \\ x-2 < -\frac{1}{2r} \end{cases}$$

$$\Rightarrow x-2 > \frac{1}{2r} \Rightarrow x > \frac{4}{r} \text{ I}$$

$$\Rightarrow x-2 < -\frac{1}{2r} \Rightarrow x < \frac{4}{r} \text{ II}$$

$$\Rightarrow D_f = (-\infty, \frac{4}{r}) \cup (\frac{4}{r}, +\infty)$$

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$$\text{الف) } f - 2|x| \geq 0 \Rightarrow 2|x| \leq f \Rightarrow |x| \leq r \Rightarrow -r \leq x \leq r \Rightarrow D_f = [-r, r]$$

$$\text{ب) } \frac{|x|}{|x|} \geq 0, |x| \neq 0 \Rightarrow \frac{\oplus}{\ominus} \Rightarrow D_f = \mathbb{R}^+ \cup \mathbb{R}^-$$

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