



الف) $x^2 - \infty x + y > 0$
 $(x-y)(x+y) > 0$

ج) $x^2 + 9x + 4 > 0$
 $(x+3)(x+4) > 0$

$D_f = (-\infty, y) \cup (y, +\infty)$

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

$\rightarrow x^2 - 4x + 4 < 0$
 $(x-1)(x-4) < 0$

$D_f = (1, 4)$

الف) $\frac{x^2 - 4x + 4}{x-4} < 0$

$\rightarrow \frac{(x-1)(x+1)}{(x-1)(x-4)} > 0$

$\frac{(x-1)(x-y)}{(x-4)} < 0$
 $D_f = (-\infty, 1) \cup (y, 4)$

$D_f = (-\infty, -1] \cup (4, +\infty)$

الف) $y = \frac{x^2 - 1}{x^2 - 1}$

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

$x^2 - 1 > 0$
 $\Delta > 0 \rightarrow x^2 - 1 > 0$
 $x(x-1)(x+1) > 0$
 $x \neq 1, 0, -1$
 $D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

الف) $y = \sqrt{x-5} - \sqrt{x-7}$

$\rightarrow y = \sqrt{x-5} - \sqrt{x-7}$

$x-1 \geq 0$
 $x \geq 1$

$x \geq 5$
 $5 \leq x$

$D_f = [5, +\infty)$

$x-1 \geq 0$
 $x \geq 1$

$1 \leq x$
 $x \leq 1$

$D_f = [1, 1]$

الف) $y = \sqrt{x-2x^2}$

→ $\sqrt{x|x|-9}$

$x-x^2 \geq 0$

$x^2-x \leq 0$

$x^2 \leq x$

$D = [0,1]$

$x \geq 0$

$|x| \geq 9$

$|x| \geq 9$

$|x| \geq 9$

$x \geq 9$

$x \leq -9$

$D_f = (-\infty, -9] \cup [9, \infty)$

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الف) $y = \frac{\sqrt{x^2+1}}{1-x^2}$

→ $\sqrt{\frac{5x+1}{5x-2}}$

$|x| \neq 0$
 $|x| \neq 1$
 $x \neq \pm 1$

$D_f = \mathbb{R} - \{ \pm 1 \}$

$\sqrt{x-2} \neq 0$
 $\sqrt{x} \neq 2$
 $x \neq 4$

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$D_f = [0, 9] \cup (9, \infty)$

الف) $y = \frac{\sin x}{x(\cos x - 1)}$

ب) $y = \frac{(\cos x + 1)}{x \sin x + 1}$

$D_f = \mathbb{R} - \{ x | x = \frac{n\pi}{2}, n \in \mathbb{Z} \}$

$\frac{n\pi}{2} | k \in \mathbb{Z}$

$x \cos x \neq 1$

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

$x \neq 0, \pm \infty$

$x \neq \frac{n\pi}{2}, n \in \mathbb{Z}$

ج) $\cot x \neq 1$

$x \neq \frac{n\pi}{2} + \frac{\pi}{4}, n \in \mathbb{Z}$

$D = \mathbb{R} - \{ \frac{n\pi}{2} | n \in \mathbb{Z} \} \cup \{ \frac{n\pi}{2} + \frac{\pi}{4} | n \in \mathbb{Z} \}$

$\frac{n\pi}{2} | k \in \mathbb{Z}$

$D_f = \mathbb{R} - \{ x | x = \frac{n\pi}{2}, n \in \mathbb{Z} \}$

د) $\sin x \neq \frac{x}{2}$

$\sin x \neq \frac{x}{2}$

$x \neq \frac{n\pi}{2}, \frac{x}{2} \neq \frac{n\pi}{2}, \frac{x}{2} \neq \frac{n\pi}{2}$

$D = \mathbb{R} - \{ \frac{n\pi}{2}, \frac{x}{2} \neq \frac{n\pi}{2}, \frac{x}{2} \neq \frac{n\pi}{2} \}$

$D = (-\infty, \frac{x}{2}) \cup (\frac{x}{2}, \infty)$

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$y = \frac{1}{\sqrt{x|x|-1}}$

$|x-x| > \frac{1}{2}$
 $|x-x| > \frac{1}{2}$
 $x-x < -\frac{1}{2}$

الف) $y = \sqrt{x-2|x|}$

$x-x^2 \geq 0$

$x^2-x \leq 0$

$|x| \leq x$

$x \leq x$

$D_f = [-1, 1]$

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

1.