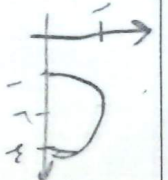


الف) $f(x) = x$



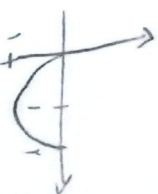
ج) $f(x-1)$



د) $xf(x)$



د) $-f(x)$



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

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

$\rightarrow x^2 - yx + \infty < 0$
 $(x-1)(x-a) < 0$

$D_f = (1, a)$

ج) $x^2 + yx + b$
 $(x+b)(x+a) \geq 0$

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

الف) $\frac{x^2 - yx + y}{x-a} < 0$

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

$\frac{1}{x-a} < 0$

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

الف) $y = \frac{x^2 - 1}{x^2 - x}$

$\Delta > 0 \Leftrightarrow x^2(x+1) > 0$

$x^2 - x > 0$
 $x(x-1) > 0$
 $x \neq 1, 0, -1$

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

الف) $y = \sqrt{x-5}$

$x-5 \geq 0$
 $x \geq 5$

$D_f = [5, +\infty)$

ج) $y = \sqrt{x-5} - x$

$x-5 \geq 0$
 $x \geq 5$

$D_f = [5, 11]$

الف) $y = \sqrt{x-2x^2}$

→ $\sqrt{x|x|-9}$

$x-x^2 \geq 0$

$x^2-x \leq 0$

$x^2 \leq x$

$D_f = [0,1]$

$x \geq 0$

Ⓟ ✓

$|x| \geq 9$

$x^2 \geq 9$

$|x| \geq 3$

$x \geq 3$

$x \leq -3$

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

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الف) $y = \frac{\sqrt{x^2+1}}{1-x^2}$

→ $\sqrt{\frac{5x+1}{5x-2}}$

$|x| \neq 0$ $D_f = \mathbb{R} - \{0\}$

$|x| \neq \sqrt{2}$

$x \neq \pm \sqrt{2}$

$5x-2 \neq 0$ $x \geq 0$

$5x \neq 2$

$x \neq \frac{2}{5}$

Ⓟ ✓

$D_f = [0, 1) \cup (1, \infty)$

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

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

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

$x \cos x \neq 1$

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

$x \neq 0, \pm \infty$

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

Ⓟ ✓

ج) $\cot x \neq 1$

$x \neq \frac{\pi}{4} + n\pi$

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

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

د) $\sin x \neq \frac{x}{2}$

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

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

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

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

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

Ⓟ ✓

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

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

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

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

الف) $y = \sqrt{x-2|x|}$

$x-x^2 \geq 0$

$x^2-x \leq 0$

$x^2 \leq x$

$x \leq 1$

$x \geq 0$

ب) $y = \sqrt{\frac{2x}{1-x}}$

$x \neq 0$

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

Ⓟ ✓