

الف) $\frac{\lambda+3}{(4\lambda^2+5\lambda+3)(\lambda-1)} \rightarrow \frac{(\lambda+3)}{(\lambda+1)(2\lambda+3)(\lambda-1)}$ $D_f = \mathbb{R} - \{-1, -\frac{3}{2}, 1\}$

ب) $\frac{\lambda+3}{(\lambda+1)(2\lambda^2+\sqrt{\lambda+3})} \rightarrow \frac{\lambda+3}{(\lambda+1)(\lambda+3)(\lambda+1)}$ $\mathbb{R} - \{-1, -3, -\frac{1}{3}\}$

الف) $\rightarrow \frac{\lambda+3}{(\lambda-1)(\lambda^2-\lambda+1)} \rightarrow D_f = \mathbb{R} - \{1\}$

ب) $\frac{\lambda+3}{(\lambda-1)(\lambda^2-\lambda+1)} \geq 0 \rightarrow \frac{-3 \quad 1}{+ \quad - \quad 0 \quad +} \quad D_f = [-\infty, -3] \cup (1, +\infty)$

$y = \frac{2}{x^2 - 5|x-1| - 2x + 5}$

$\lambda \geq 1 \quad \lambda^2 - 5\lambda + 5 - 2\lambda + 5 \neq 0 \rightarrow \lambda^2 - 7\lambda + 10 \neq 0 \rightarrow (\lambda-2)(\lambda-5) \neq 0$

$\lambda < 1 \quad \lambda^2 + 5\lambda - 5 - 2\lambda + 5 \neq 0 \rightarrow \lambda^2 + 3\lambda \neq 0 \rightarrow \lambda(\lambda+3) \neq 0$

$D_f = \mathbb{R} - \{-3, 0, 2, 5\}$

الف) $y = \sqrt{[-x]-2} \rightarrow [-x]-2 \geq 0 \rightarrow [-x] \geq 2 \quad D_f = (-\infty, -2]$

ب) $y = \frac{5x^2+6}{[x]^2-2[x]-3} \rightarrow \frac{5x^2+6}{t^2-2t-3} \neq 0 \rightarrow (t-3)(t+1) \neq 0$

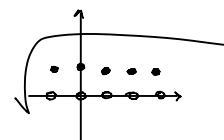
$[x] \neq -1 \rightarrow [-1, 0)$
 $[x] \neq 3 \rightarrow [3, 4)$
 $D_f = \mathbb{R} - \{[-1, 0), [3, 4)\}$

الف) $y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right]}$

$+1 \left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0 + 1 \rightarrow 2\left[x + \frac{1}{6}\right] \geq 1$
 $\left[x + \frac{1}{6}\right] \geq \frac{1}{2} \rightarrow x + \frac{1}{6} \geq \frac{1}{2}$
 $x \geq \frac{1}{3}$
 $D_f = \left[\frac{1}{3}, +\infty\right)$

ب) $y = \sqrt{\left[x - \frac{1}{3}\right] + \left[\frac{1}{3} - x\right]}$

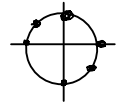
$[t] + [t] \geq 0$
 $t \in \mathbb{Z} \quad \lambda \in \mathbb{Z} + \frac{1}{3}$
 $x - \frac{1}{3} \in \mathbb{Z}$



$D_f = \{x \mid x = k, k \in \mathbb{Z} + \frac{1}{3}\}$

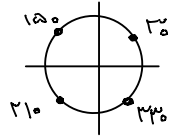
$$\text{الف) } y = \frac{\cot x + 1}{\tan x + 1} \quad \frac{\frac{\cos}{\sin} + 1}{\frac{\sin}{\cos} + 1} \rightarrow \sin \neq 0 / \cos \neq 0 / \frac{\cos}{\sin} + 1 \neq 0 \rightarrow \frac{\cos}{\sin} \neq -1$$

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



$$\text{ب) } y = \sqrt{1 - 4 \sin^2 x}$$

$$1 - 4 \sin^2 x \geq 0 \rightarrow 1 \geq 4 \sin^2 x \rightarrow \frac{1}{4} \geq \sin^2 x \rightarrow \frac{1}{2} \geq \sin x \geq -\frac{1}{2} \rightarrow [k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}]$$



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$$\text{الف) } y = \sqrt{2 \sin x - 1}$$

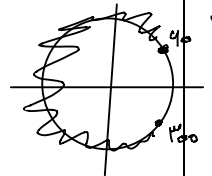
$$2 \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{2} \quad \frac{\pi}{6} \leq x \leq \frac{5\pi}{6}$$

$$D_f = [\frac{\pi}{6} + 2k\pi, \frac{5\pi}{6} + 2k\pi]$$

$$\text{ب) } y = \sqrt{1 - 2 \cos x}$$

$$1 - 2 \cos x \geq 0 \rightarrow 1 \geq 2 \cos x \rightarrow \frac{1}{2} \geq \cos x$$

$$D_f = [2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}]$$



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$$\text{الف) } y = \arcsin(x^2 + 3x + 1)$$

$$-1 \leq x^2 + 3x + 1 \leq 1$$

$$x^2 + 3x + 1 \geq 0 \rightarrow (x+1)(x+2) \geq 0$$

$$x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0$$

$$D_f = [-3, -2] \cup [-1, 0]$$

$$\text{ب) } \cos y = \sqrt{5 - 2x}$$

$$-1 \leq \sqrt{5 - 2x} \leq 1 \rightarrow \sqrt{5 - 2x} \leq 1 \rightarrow 5 - 2x \leq 1 \rightarrow x \geq 2$$

$$5 - 2x \geq 0 \rightarrow x \leq \frac{5}{2}$$

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

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

$$D_f = [2, \frac{5}{2}]$$

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$$\text{الف) } y = \log_r(1 - \log_r^x)$$

$$x > 0$$

$$1 - \log_r^x > 0 \rightarrow 1 > \log_r^x \rightarrow r > x \quad D_f = (0, r)$$

$$\text{ب) } y = \log_r \frac{(1 - \log_r^x)^{\frac{1}{r}}}{r}$$

$$x > 0$$

$$1 - \log_r^x > 0 \rightarrow 1 > \log_r^x \rightarrow \frac{1}{r} > x \rightarrow 0 < x < \frac{1}{r}$$

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$$\text{الف) } y = \sqrt{r^x - x^r} - \lambda$$

$$r^{x-\lambda^r} - \lambda \geq 0 \rightarrow r^{x-\lambda^r} \geq \lambda^r$$

$$r^{x-\lambda^r} \geq \lambda^r \rightarrow x - \lambda^r \geq \log_r \lambda^r \rightarrow x \geq \lambda^r + \log_r \lambda^r$$

$$\text{ب) } y = \left(\frac{3x + 5}{2x + 4} \right)!$$

$$\frac{3x + 5}{2x + 4} \in \mathbb{W} \rightarrow$$

$$D_f = \{x \mid x = \frac{-f_W + 5}{2W - 4}, k \in \mathbb{W}\}$$

$$\frac{-f_W - 5}{2W - 4} \rightarrow \frac{-f_W + 5}{2W - 4}$$

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