

الف) $y = \frac{x+3}{2x^3 + 3x^2 - 8x + 3}$ $DP = \mathbb{R} - \left\{ \frac{1}{2}, \frac{1}{3} \right\}$

ب) $y = \frac{x+3}{2x^3 + 9x^2 + 10x + 3}$ $DP = \mathbb{R} - \left\{ -\frac{3}{2}, -\frac{1}{3} \right\}$

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الف) $y = \frac{x+3}{x^3 - 2x^2 + 2x - 1}$ $DP = \mathbb{R} - \{1\}$

ب) $y = \sqrt{\frac{x+3}{x^3 - 2x^2 + 2x - 1}}$ $DP = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$

الف) $y = \frac{x}{x^3 - 5|x-1| - 2x + 5}$

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الف) $y = \sqrt{-x} - 2$

ب) $y = \frac{an^2 + 4}{[n]^2 - 2[n] - 3}$

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الف) $y = \sqrt{\left[n - \frac{1}{p}\right] + \left[n + \frac{p}{p}\right]}$ $DP = \left[\frac{1}{p}, +\infty\right)$

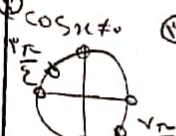
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$DP = \left\{ x \mid x = k + \frac{1}{p}, k \in \mathbb{Z} \right\}$

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

① $\cos x \neq 0$ ② $\sin x \neq -\cos x$

 $D_f = \mathbb{R} - (\{\frac{\pi}{2}\} \cup \{k\pi - \frac{\pi}{4}\})$

ب) $\sqrt{1 - \sin^2 x}$
 $1 - \sin^2 x \geq 0$
 $(1 - \sin x)(1 + \sin x) \geq 0$
 $\sin x = \frac{1}{2}$ $\sin x = -\frac{1}{2}$

$-\frac{1}{2} \leq \sin x \leq \frac{1}{2} \rightarrow \sin x = [-\frac{1}{2}, \frac{1}{2}]$

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

الف) $y = \sqrt{r \sin x} - 1$
 $r \sin x - 1 \geq 0$
 $\sin x \geq \frac{1}{r}$


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

ب) $\sqrt{1 - r \cos x}$
 $1 - r \cos x \geq 0$
 $\frac{1}{r} \geq \cos x$


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

الف) $y = \arcsin(x^2 + 2x + 1)$

$\sin y = x^2 + 2x + 1$ ① $0 \leq x^2 + 2x + 1 \leq 1$
 $-1 \leq \sin y \leq 1$ $a+b \rightarrow x+1$
 $-1 \leq x^2 + 2x + 1 \leq 1$ $x = -1, -2$
 $\textcircled{1} x^2 + 2x + 1 \leq 1 \rightarrow (x+1) \leq 0$ $\frac{-1}{2} = -\frac{1}{2}$
 $\frac{-1}{2} \leq x \leq 1$ $(-\infty, -1] \cup [-1, \infty)$
 $\textcircled{2} x^2 + 2x + 1 \geq 0 \rightarrow (x+1)^2 \geq 0$ $\textcircled{1} \cap \textcircled{2} = [-1, 1] \cup [-1, 1]$
 $D_f = [-1, 1] \cup [-1, 1]$

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

$\downarrow$
 $0 \leq a - 2x \leq 1 \rightarrow x \leq \frac{a}{2}$
 $0 \leq a - 2x \leq 1$
 $-a \leq -2x \leq -1$
 $\frac{a}{2} \leq x \leq \frac{a}{2} \rightarrow x = \frac{a}{2}$ $D_f = [\frac{a}{2}, \frac{a}{2}]$

الف) $y = \log_r (1 - \log_r x)$

$\log_r x \rightarrow x > 0$ ① $\textcircled{1} \cap \textcircled{2} = (0, 1)$
 $1 - \log_r x > 0$ $D_f = (0, 1)$
 $1 > \log_r x$
 $\log_r x > \log_r x \rightarrow x < 1$ ②

ب) $\log_r (1 - \log_r \frac{x}{r})$

$\log_r x \rightarrow x > 0$ ① $\textcircled{1} \cap \textcircled{2} = (\frac{1}{r}, r)$
 $1 - \log_r \frac{x}{r} > 0$
 $1 > \log_r \frac{x}{r}$
 $\frac{x}{r} < r$
 $x < r^2$
 $x > (\frac{1}{r})^r \rightarrow x > \frac{1}{r^r}$ $D_f = (\frac{1}{r^r}, r^2)$

$y = \sqrt{r^{x-n} - 1}$ $\frac{1}{-b+b} = 0$

$r^{x-n} - 1 \geq 0$ $1 \leq r^{x-n}$
 $r^{x-n} - 1 = 0$ $D_f = \{1\}$
 $x - n = 0$
 $x = n$
 $a+b+c = 0 \rightarrow x = 1$ $x = 1$
 $x = \frac{1}{a}$

ب) $y = (\frac{r^{x+a}}{r^{x+b}})!$

$\frac{r^{x+a}}{r^{x+b}} \in \mathbb{N} \Rightarrow$
 $\frac{r^{x+a}}{r^{x+b}} = \frac{r^a}{r^b} = \frac{r^{a-b}}{r^b}$

$D_f = \{x \mid x = \frac{a-b}{r^b}, r \in \mathbb{N}\}$