

$$1) y = \frac{x+2}{2x^2+3x-1} \Rightarrow \frac{x+2}{(x-1)(2x^2+5x-2)} \Rightarrow D_f = \mathbb{R} - \{2, \frac{1}{2}, 1\}$$

1, 2, 5

$$2) y = \frac{x+2}{2x^2+9x+10} \Rightarrow \frac{x+2}{(x+1)(2x^2+7x+10)} \Rightarrow D_f = \mathbb{R} - \{-\frac{1}{2}, -1, -\frac{1}{5}\}$$

$$3) y = \frac{x^2+3}{x^3-2x^2+2x-1} \Rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \Rightarrow D_f = \mathbb{R} - \{1\}$$

$$4) y = \sqrt{\frac{x+3}{x^2-2x^2+2x-1}} \Rightarrow \frac{-3}{x-1} = \frac{1}{x-1} \Rightarrow D_f = \mathbb{R} - \{1\}$$

$$\frac{2}{x^2-2x+1-2x+4} \rightarrow x^2-4x+5-2x+4 = x^2-6x+9 \rightarrow x=3, 0$$

$$\rightarrow x^2+4x-4-2x+4 = x^2+2x \rightarrow x=0, 2$$

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

دست! $y = \sqrt{-x}$ $\Rightarrow [-x] \geq -2 \Rightarrow x \leq 1 \Rightarrow D_f = (-\infty, 1]$

الف - $[-n] - 2 \geq 0 \rightarrow [-n] \geq 2 \rightarrow -n \geq 2 \rightarrow n \leq -2 \rightarrow D_f = (-\infty, -2]$

ب) $y = \sqrt{\frac{ax^2+2}{[x]^2-2[x]-2}}$ $\Rightarrow [x] = t \Rightarrow t^2-2t-2=0 \Rightarrow t=3, -1 \Rightarrow [x] = -1 \Rightarrow -1 \leq x < 0$
 $\Rightarrow [x] = 3 \Rightarrow 3 \leq x < 4 \Rightarrow D_f = \mathbb{R} \setminus [0, 3] \cup [4, 5]$

$$1) y = \sqrt{[x-\frac{1}{2}] + [x+\frac{1}{2}]} \Rightarrow \sqrt{2[x+\frac{1}{2}]-1} \Rightarrow 2[x+\frac{1}{2}] \geq 1 \Rightarrow [x+\frac{1}{2}] \geq \frac{1}{2}$$

$$\Rightarrow x+\frac{1}{2} \geq 1 \Rightarrow x \geq \frac{1}{2} \Rightarrow D_f = [\frac{1}{2}, +\infty)$$

ب) $y = \sqrt{[x-\frac{1}{2}] + [\frac{1}{2}-x]}$ if $x-\frac{1}{2} = t \Rightarrow \sqrt{[t] + [-t]} \Rightarrow t \in \mathbb{Z}$

$\Rightarrow x-\frac{1}{2} \in \mathbb{Z} \Rightarrow x = k + \frac{1}{2}, k \in \mathbb{Z}$

$\Rightarrow D_f = \{x \mid x = k + \frac{1}{2}, k \in \mathbb{Z}\}$

$$a) y = \frac{\cos x + 1}{\cos x + 1} \Rightarrow \Rightarrow D_f = \mathbb{R} \setminus \left\{ \frac{k\pi}{2} \right\} = \left\{ \frac{k\pi}{2} + \frac{\pi}{2} \right\}$$

$$b) y = \sqrt{1 - \cos^2 x} \Rightarrow \Rightarrow \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{4} \Rightarrow \sin x \leq \frac{1}{2} \Rightarrow \Rightarrow D_f = \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right]$$

$$a) y = \sqrt{1 - \sin^2 x} \Rightarrow \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{4} \Rightarrow \sin x \leq \frac{1}{2} \Rightarrow \Rightarrow D_f = \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right]$$

$$b) y = \sqrt{1 - \cos^2 x} \Rightarrow \cos^2 x \leq 1 \Rightarrow \cos^2 x \leq \frac{1}{4} \Rightarrow \cos x \leq \frac{1}{2} \Rightarrow \Rightarrow D_f = \left[k\pi + \frac{\pi}{3}, k\pi + \frac{2\pi}{3} \right]$$

$$a) y = \arcsin(x^2 + 1) \Rightarrow x^2 + 1 \leq 1 \Rightarrow x^2 \leq 0 \Rightarrow x = 0 \Rightarrow D_f = \{0\}$$

$$b) y = \arcsin(x^2 + 1) \Rightarrow x^2 + 1 \leq 1 \Rightarrow x^2 \leq 0 \Rightarrow x = 0 \Rightarrow D_f = \{0\}$$

$$a) y = \log_r(1 - \log_r x) \Rightarrow I \rightarrow x > 0 \quad II \rightarrow -\log_r x \leq 1 \Rightarrow \log_r x \geq -1 \Rightarrow x \geq r^{-1}$$

$$\Rightarrow x \geq r^{-1} \Rightarrow D_f = [r^{-1}, +\infty)$$

$$b) y = \log_r(1 - \log_r x) \Rightarrow I \rightarrow x > 0 \quad II \rightarrow \log_r x < 1 \Rightarrow x < r \Rightarrow D_f = (0, r)$$

$$a) y = \sqrt{x^2 + 1} \Rightarrow x^2 + 1 \geq 0 \Rightarrow x^2 \geq -1 \Rightarrow x \in \mathbb{R} \Rightarrow D_f = \mathbb{R}$$

$$b) y = \left(\frac{x^2 + 1}{x^2 + 1} \right) \Rightarrow \frac{x^2 + 1}{x^2 + 1} \in \mathbb{Z} \Rightarrow x^2 + 1 = k \Rightarrow x^2 = k - 1 \Rightarrow x = \pm \sqrt{k - 1} \Rightarrow D_f = \{x \mid x = \pm \sqrt{k - 1}, k \in \mathbb{Z}\}$$

$$8 - \text{الف}) -1 \leq x^r + w_n + 1 \leq 1 \xrightarrow{\frac{q}{\varepsilon} - \frac{q}{\varepsilon}} -1 \leq x^r + w_n + \frac{q}{\varepsilon} - \frac{q}{\varepsilon} \leq 1$$

$$\frac{1}{\varepsilon} \leq x^r + w_n + \frac{q}{\varepsilon} \leq \frac{q}{\varepsilon} \rightarrow \frac{1}{\varepsilon} \leq \left(x + \frac{w}{r}\right)^r \leq \frac{q}{\varepsilon}$$

$$\int \left(x + \frac{w}{r}\right)^r \leq \frac{q}{\varepsilon} \rightarrow -\frac{r}{r} \leq x + \frac{w}{r} \leq \frac{r}{r} \rightarrow -r \leq x \leq 0 \quad \text{I}$$

$$\int \left(x + \frac{r}{r}\right)^r \geq \frac{1}{\varepsilon} \rightarrow x + \frac{r}{r} \geq \frac{1}{r} \rightarrow x \geq -1 \quad \text{II} \quad x + \frac{r}{r} \leq -\frac{1}{r} \rightarrow x \leq -r \quad \text{II}$$

$$\text{I} \cap \text{II} \rightarrow D_f = [-r, -r] \cup [-1, 0]$$

$$10 - \text{الف}) \quad x_n - n^r - 1 \geq 0 \rightarrow x_n - n^r \geq 1 \rightarrow x_n - n^r \geq r \rightarrow$$

$$n^r - \varepsilon n + r \leq 0 \rightarrow (n-1)(n-r) \leq 0 \quad \begin{array}{c} 1 \quad r \\ + \mid - \mid + \end{array} \rightarrow D_f = [1, r]$$