

معادله: $\frac{x+1}{x^2+x-1}$ مخرج: x^2+x-1 فاصله: $(x-1)(x+1)$

$$1- \text{الف)} \quad y = \frac{x+1}{x^2+x-1} \quad \frac{x+1}{(x-1)(x+1)}$$

$$D_f = \mathbb{R} - \left\{ -1, \frac{1}{x} \right\}$$

$$\begin{array}{r} x^2+x-1 \mid x+1 \\ -x^2-x+1 \\ \hline 2x \\ -2x+2 \\ \hline 0 \end{array} \quad \begin{array}{r} x^2+x-1 \mid x+1 \\ -x^2-x+1 \\ \hline 2x \\ -2x+2 \\ \hline 0 \end{array}$$

$$ب) \quad y = \frac{x+1}{x^2+9x^2+10x+1} \quad \frac{x+1}{(x+1)(x^2+10x+1)}$$

$$D_f = \mathbb{R} - \left\{ -1, -\frac{1}{10} \right\}$$

$$\begin{array}{r} x^2+9x^2+10x+1 \mid x+1 \\ -x^2-x+1 \\ \hline 10x+2 \\ -10x-10 \\ \hline -8 \end{array} \quad \begin{array}{r} x^2+9x^2+10x+1 \mid x+1 \\ -x^2-x+1 \\ \hline 10x+2 \\ -10x-10 \\ \hline -8 \end{array}$$

$$پ) \quad y = \frac{x+1}{x^2-x^2+x-1} \quad \frac{x+1}{(x-1)(x^2-x+1)}$$

$$D_f = \mathbb{R} - \left\{ 1 \right\}$$

$$\begin{array}{r} x^2-x^2+x-1 \mid x+1 \\ -x^2+x+1 \\ \hline 2x \\ -2x+2 \\ \hline 0 \end{array} \quad \begin{array}{r} x^2-x^2+x-1 \mid x+1 \\ -x^2+x+1 \\ \hline 2x \\ -2x+2 \\ \hline 0 \end{array}$$

$$د) \quad y = \sqrt{\frac{x+1}{x^2-x^2+x-1}} \Rightarrow \sqrt{\frac{x+1}{(x-1)(x^2-x+1)}} \Rightarrow \frac{x+1}{(x-1)(x^2-x+1)} \geq 0$$

$$\frac{-1}{+1} - \frac{1}{0} +$$

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

$$ه) \quad y = \frac{x}{x^2-5x+4} \quad \frac{x}{(x-1)(x-4)} \quad \frac{x}{x^2+5x-6} \quad \frac{x}{(x+6)(x-1)}$$

$$D_f = \mathbb{R} - \left\{ -6, 0, 1, 4 \right\}$$

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

$$ز) \quad \frac{5x^2+4}{[x]^2-x-3} \Rightarrow ([x]-3)([x]+1)$$

$$[x] \neq 3 \Rightarrow [3, \infty) \quad / \quad [x] \neq -1 \Rightarrow [-1, 0)$$

$$MRNOTE \quad D_f = \mathbb{R} - [-1, 0) \cup [3, \infty)$$

ا- ا) $y = \sqrt{\left[x - \frac{1}{r}\right] + \left[x + \frac{r}{r}\right]} \rightarrow \left[x - \frac{1}{r}\right] + \left[x + \frac{r}{r}\right] \geq 0 \xrightarrow{+1} r\left[x + \frac{r}{r}\right] \geq 1$
 $\left[x + \frac{r}{r}\right] \geq \frac{1}{r} \Rightarrow \left[x + \frac{r}{r}\right] \geq 1 \rightarrow x + \frac{r}{r} \geq 1 \rightarrow x \geq \frac{1}{r}$ $D_f: \left[\frac{1}{r}, +\infty\right)$

ب) $y = \sqrt{\left[x - \frac{1}{r}\right] \left[-x + \frac{1}{r}\right]} \rightarrow \left[x - \frac{1}{r}\right] + \left[-x + \frac{1}{r}\right] \geq 0$ $a \in \mathbb{Z} \rightarrow [a] + [-a] = 0$
 $x - \frac{1}{r} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{r} \rightarrow D_f = \left\{x \mid x = k\frac{1}{r}, k \in \mathbb{Z}\right\}$

4- ا) $y = \frac{\cot x + 1}{\tan x + 1}$ $\tan x \neq -1$ $\cos x \neq 0$ $D_f = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2}\right\}$
 با تعريف $\sin$ و $\cos$ $\sin \neq 0 \rightarrow x \neq k\pi$

ب) $y = \sqrt{1 - \sin^2 x}$ $1 - \sin^2 x \geq 0 \rightarrow 1 \geq \sin^2 x \rightarrow \frac{1}{2} \geq \sin^2 x \rightarrow \frac{1}{\sqrt{2}} \geq |\sin x|$
 $-\frac{1}{\sqrt{2}} \leq \sin x \leq \frac{1}{\sqrt{2}}$ $D_f: \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}\right]$

5- ا) $y = \sqrt{2 \sin x - 1} \rightarrow 2 \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$ $D_f: \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}\right]$

ب) $y = \sqrt{1 - 2 \cos x} \rightarrow 1 - 2 \cos x \geq 0 \rightarrow \frac{1}{2} \geq \cos x$ $D_f: \left[k\pi + \frac{\pi}{3}, k\pi + \frac{5\pi}{3}\right]$

ا- ا) $y = \arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1$
 $\frac{-r}{d} - \frac{-1}{d+}$ $(x+r)(x+1) \geq 0$ $x(x+r) \leq 0$ $\frac{-r}{d} - \frac{-1}{d+}$
 $D_f: [-r, -1] \cup [-1, 0]$

ب) $\cos y = \sqrt{a - rx}$ $-1 \leq \sqrt{a - rx} \leq 1$ $\sqrt{} \rightarrow 0 \leq a - rx \leq 1$
 $-a \leq -rx \leq 1 - a \rightarrow \frac{a}{r} \geq x \geq \frac{1-a}{r}$ $D_f: \left[\frac{1-a}{r}, \frac{a}{r}\right]$

$$9- \text{ ايف } y = \log_r (1 - (\log_r^x)^x) \quad x > 0 \quad (1)$$

$$1 - \log_r^x > 0 \rightarrow 1 > \log_r^x \rightarrow x < r \quad (2)$$

$$r > 2 \rightarrow 0 < x < r \Rightarrow D_f = (0, r)$$

$$\text{ب) } y = \log_r (1 - (\log_{1/r}^x)^x) \quad x > 0 \quad (1)$$

$$1 - \log_{1/r}^x > 0 \rightarrow 1 > \log_{1/r}^x \rightarrow x < 1/r \quad (2)$$

حيث متباينة هوالايت موجبناضادله بعض مبركود

$$r > 2: 0 < x < 1/r \Rightarrow D_f = (0, 1/r)$$

$$\log_{1/r}^x < 1 \rightarrow x > 1/r \rightarrow D_f = (1/r, +\infty)$$

$$10- \text{ ايف } y = \sqrt{r^x x - x^2} - x \quad \frac{x(x-x)}{r^x - 1} > 0 \rightarrow \frac{x(x-x)}{r^x} > r^x$$

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

$$\frac{1}{r} < x < r \quad D_f = [1, r]$$

$$\text{ب) } y = \left(\frac{rx + \omega}{r^x + r} \right)!$$

$$\frac{rx + \omega}{r^x + r} \in \mathbb{N} \rightarrow x < -\frac{rw - \omega}{rw - r}$$

$$D_f = \left\{ x \mid x = \frac{\omega - rk}{rk - r}, k \in \mathbb{N} \right\}$$

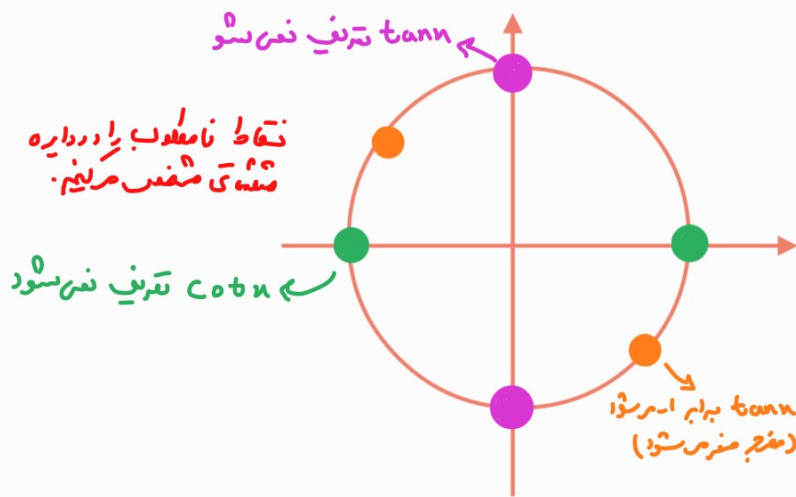
الف - 4) $y = \frac{\cot x + 1}{\tan x + 1}$

$x \neq k\pi + \frac{\pi}{2}$

$x \neq k\pi + \frac{\pi}{2} \cup x \neq k\pi$

$\rightarrow x \neq \frac{k\pi}{2}$

$\rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{2} \right\}$



ب - 9) $y = \log_2 (1 - \log_{\frac{1}{2}} x)$ $\rightarrow \log_{\frac{1}{2}} x \rightarrow x > 0$

$\rightarrow 1 - \log_{\frac{1}{2}} x > 0 \rightarrow \log_{\frac{1}{2}} x < 1$ ^{متناهی (نه 1)} $\rightarrow x > \frac{1}{2}$

$D_f = (\frac{1}{2}, +\infty)$