

$$\text{الف) } y = \sqrt{\frac{x^2 - x - 4}{x^2 - 13x^2 + 34}} \quad x \in \mathbb{R} \quad (x-3)(x+2) \rightarrow x = -2$$

$$\begin{array}{ccccccc} -3 & -2 & 2 & 3 & & & \\ + & - & - & + & & & \\ \hline & 3 & - & 5 & & & \end{array}$$

$$\frac{x^2 - 13x^2 + 34}{x^2 - x - 4} \rightarrow (x-1)(x-3)(x+2)$$

$$x^2 = 9 \rightarrow x = \pm 3 \quad x^2 = 4 \rightarrow x = \pm 2$$

$$D_f = (-\infty, -3) \cup (2, +\infty) - \{3\}$$

$$\text{ب) } y = \sqrt{\frac{x^2 - 2x^2 - 8x + 9}{x^2 + 2x^2 - 8x - 9}}$$

$$\begin{array}{ccccccc} -3 & -2 & -1 & 1 & 2 & 3 & \\ + & - & + & - & + & - & + \\ \hline & 3 & - & 5 & & & \end{array}$$

$$\frac{x^2 + 2x^2 - 8x - 9}{x^2 - 2x^2 - 8x + 9} \rightarrow (x+1)(x+3)(x-2)$$

$$D_f = (-\infty, 3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$$

$$\text{الف) } y = \sqrt{[-x] - 2}$$

$$[-x] - 2 \geq 0$$

$$[-x] \geq 2$$

$$[-x] \geq 2 \rightarrow x \leq -2$$

$$D_f = (-\infty, -2]$$

$$\text{ب) } y = \frac{2x^2 + 9}{[x]^2 - 2[x] - 3}$$

$$[x]^2 - 2[x] - 3 \neq 0$$

$$([x] - 3)([x] + 1)$$

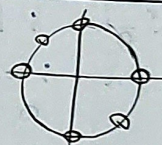
$$[x] \neq 3 \quad [x] \neq -1$$

$$D_f = (-\infty, -1) \cup [0, 3) \cup [4, +\infty)$$

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

$$\tan x \neq -1 \quad \sin x \neq 0 \quad \cos x \neq 0$$

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



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

$$1 - f \sin^2 x \geq 0$$

$$1 \geq f \sin^2 x$$

$$\frac{1}{f} \geq \sin^2 x \rightarrow \frac{1}{f} \geq \sin x \geq -\frac{1}{f}$$

$$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$



$$\text{الف) } y = \sqrt{1 - \log_{\frac{1}{f}}^{n-1}}$$

$$n-1 > 0 \quad n > 1$$

$$1 - \log_{\frac{1}{f}}^{n-1} \geq 0$$

$$1 \geq \log_{\frac{1}{f}}^{n-1}$$

$$\frac{1}{f} \leq n-1$$

$$\frac{1}{f} \leq n$$

$$\text{ب) } y = \sqrt{\frac{x^2 - x}{1 - \log_f^{x^2 - x}}}$$

$$x^2 - x \geq 0$$

$$\begin{array}{ccc} + & - & + \\ \hline & 1 & \end{array}$$

$$x^2 - 13x^2 > 0$$

$$\begin{array}{ccc} + & - & + \\ \hline & 1 & \end{array}$$

$$\log_f^{x^2 - x} \neq 1$$

$$x^2 - 13x^2 \neq 1$$

$$x^2 - 13x^2 - 1 \neq 0$$

$$x \neq 1$$

$$D_f = (-\infty, 0) \cup (3, +\infty) - \{1, 3\}$$

$$\text{الف) } y = \sqrt{r^{fm-x^2}}$$

$$r^{fm-x^2} - 1 \geq 0$$

$$r^{fm-x^2} \geq 1$$

$$fm - x^2 \geq 0 \rightarrow x^2 - fm + 1 \leq 0$$

$$\begin{array}{ccc} + & - & + \\ \hline & 1 & \end{array}$$

$$D_f = [1, 3]$$

$$\text{ب) } y = \left(\frac{r_m + 2}{r_m + f} \right)!$$

$$\frac{r_m + 0}{r_m + f} \in \mathbb{W} \rightarrow r_m + 0 = fW + fW$$

$$r_m - fW = fW - 2$$

$$r(r - fW) = fW - 2$$

$$r = \frac{fW - 2}{f - rW}$$

$$D_f = \left\{ \frac{r_k - 2}{f - rk}, k \in \mathbb{W} \right\}$$

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$$2x^2 + y^2 - 4x + 9y + k = 0$$

$$k = ?$$

$$(y+3)^2 + (\sqrt{2}x - \sqrt{2})^2 = 0$$

$$y + 9 + 9y + 2x^2 + 2 - 4x = 0$$

$$k = 9 + 2 = 11$$

$$f(x) = \begin{cases} x^2 + 4x & ; x \geq a \\ 2x + a + 2 & ; x \leq a \end{cases} \quad (a > 0)$$

$$a^2 + 4a = 2a + a + 2$$

$$a^2 + a - 2 = 0 \rightarrow a = -2 \text{ یا } a = 1$$

$$f(1) = ?$$

$$f(x) = \begin{cases} x^2 + 4x & ; x \geq 1 \\ 2x + 3 & ; x \leq 1 \end{cases}$$

$$f(1) = 1 + 4 = 5$$

$$f(x) = \begin{cases} x^2 - b & ; |n+1| \geq 2 \\ a + 2x & ; -3 \leq x \leq -1 \end{cases}$$

$$|n+1| \geq 2 \rightarrow n+1 \geq 2 \rightarrow n \geq 1$$

$$\rightarrow n+1 \leq -2 \rightarrow n \leq -3$$

$$a+b = ?$$

$$f(-3) = 18 - b = a - 6 \Rightarrow a+b = 24$$

$$y = \sqrt{4x-a} + \sqrt{b-3x}$$

$$D_y = \{2\} \quad \frac{b}{a} = ?$$

$$4x-a \geq 0 \xrightarrow{x=2} 12-a=0 \rightarrow a=12$$

$$b-3x \geq 0 \xrightarrow{x=2} b-6=0 \rightarrow b=6$$

$$\frac{b}{a} = \frac{6}{12} = \frac{1}{2}$$

$$y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+5}}$$

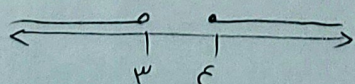
$$\frac{-1}{-6} + \frac{3}{0}$$

$$D_f = [-1, 3) \cup (3, 9]$$

$$y = \sqrt{[x]-4} + \sqrt{2-[x]}$$

$$[x]-4 \geq 0 \quad x \geq 4$$

$$2-[x] \geq 0 \quad 3 > x$$



$$D_f = \emptyset$$