

$$f(n) = \sqrt{(a-r)n^2 + an + b} \Rightarrow D_f = [1^+ + \infty)$$

$$a=2 \Rightarrow 2n+b \geq 0 \quad n \geq -\frac{b}{2} \Rightarrow -\frac{b}{2} \geq 1^+ \Rightarrow b \geq -4$$

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$$f(n) = \sqrt{n^2 + 2n + 2 - m^2} \Rightarrow D_f = \mathbb{R}$$

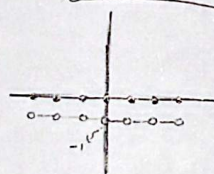
$$n^2 + 2n + 2 - m^2 \geq 0 \Rightarrow \Delta \leq 0 \Rightarrow 4 - 4 + 4m^2 \leq 0 \Rightarrow 4m^2 \leq 4 \Rightarrow m^2 \leq 1 \Rightarrow -1 \leq m \leq 1$$

$$1 - (-1) = 2$$

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$$f(n) = \frac{\sqrt{1-n^2}}{[n] + [-n] + 1}$$

$$\begin{aligned} 1-n^2 \geq 0 &\Rightarrow 1 \geq n^2 \Rightarrow -1 \leq n \leq 1 \\ [n] + [-n] \neq -1 &\Rightarrow n \in \mathbb{Z} \end{aligned} \quad \left. \begin{aligned} &\{ -1, 0, 1 \} \\ &\{ -1, 0, 1, 2 \} \end{aligned} \right\}$$



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$$الف) y = \sqrt{n^2 + 3n^2} \Rightarrow n^2 + 3n^2 \geq 0 \Rightarrow n^2(n+3) \geq 0 \quad \begin{aligned} &\frac{-3}{-} \quad \frac{0}{+} \quad \frac{+}{+} \\ &D_f = [-3, +\infty) \end{aligned}$$

$$ب) y = \sqrt{\frac{(n^2-1)(n^2-3n^2)}{n^2-1}} \quad \frac{(n+1)(n-1)n^2(n-3)}{(n-1)(n^2+n+1)} \geq 0 \quad \begin{aligned} &\frac{-1}{+} \quad \frac{0}{-} \quad \frac{1}{-} \quad \frac{3}{+} \\ &D_f = (-\infty, -1] \cup \{0\} \cup [3, +\infty) \end{aligned}$$

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$$الف) y = \sqrt{|n-2| - 3} \quad |n-2| \geq 3 \Rightarrow n-2 \geq 3 \Rightarrow n \geq 5 \quad \begin{aligned} &\searrow \\ &n-2 \leq -3 \Rightarrow n \leq -1 \end{aligned} \quad D_f = \mathbb{R} - (-1, 5)$$

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$$ب) y = \sqrt{4 - |2-n|} \Rightarrow 4 - |2-n| \geq 0 \Rightarrow 4 \geq |2-n| \Rightarrow -4 \leq 2-n \leq 4 \Rightarrow -2 \leq n \leq 6$$

$$D_f = [-2, 6]$$

$$\text{الف) } y = \sqrt{1 - u|u|}$$

$$1 \geq |u| \Rightarrow |u| \geq 0 \Rightarrow 0 \leq u^2 \leq 1 \Rightarrow \frac{-1}{+} \frac{1}{-} + \quad [0, 1] \text{ I}$$

$$\text{I} \cup \text{II} = \mathbb{R}_f = (-\infty, 1]$$

$$\Rightarrow |u| \geq 1 \Rightarrow u^2 + 1 \geq 0 \Rightarrow \mathbb{R} = (-\infty, \infty) \text{ II}$$

$$\text{ب) } y = \frac{1}{\sqrt{v|u-1|}}$$

$$v \geq |u-1| \Rightarrow v \geq u-1 \geq -v \Rightarrow 1 \geq u \geq 1-v \quad D_f = [1, \infty) - \{v, 0\}$$

$$\sqrt{v|u-1|} \neq 1 \Rightarrow v|u-1| \neq 1 \Rightarrow |u-1| \neq \frac{1}{v} \Rightarrow u \neq 1 \pm \frac{1}{v}$$

$$\text{الف) } y = \frac{\sin^v u - 1}{\cos u}$$

$$\cos u \neq 0 \quad \text{Unit Circle}$$

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

$$\text{ب) } y = \frac{\cos u}{v \cos u - 1}$$

$$\cos u \neq \frac{1}{v} \quad \text{Unit Circle}$$

$$D_f = \mathbb{R} - \left\{v k \pi \pm \frac{\pi}{v}\right\}$$

$$\text{الف) } y = \frac{u+v}{|v u + 1| - |u + v|}$$

$$|v u + 1| \neq |u + v| \Rightarrow (v u + 1)^2 \neq (u + v)^2 \Rightarrow \varepsilon u^2 + \varepsilon u + 1 \neq u^2 + 4 u v + 9$$

$$D_f = \mathbb{R} - \left\{-\frac{\varepsilon}{v}, v\right\}$$

$$u \neq \frac{-v \pm 10}{9} \Rightarrow u \neq v, -\frac{1}{9} \Rightarrow \frac{\varepsilon}{v}$$

$$v u^2 - v u - 1 \neq 0 \Rightarrow \Delta = \varepsilon + \varepsilon \wedge v^2 \geq 100$$

$$\text{ب) } y = \sqrt{|v u + 1| - |u + v|}$$

$$|v u + 1| \geq |u + v| \Rightarrow (v u + 1)^2 \geq (u + v)^2 \Rightarrow \varepsilon u^2 + \varepsilon u + 1 \geq u^2 + 4 u v + 9$$

$$v u^2 - v u - 1 \geq 0 \Rightarrow (u + \frac{\varepsilon}{v})(u - v) \geq 0 \Rightarrow \frac{-\frac{\varepsilon}{v}}{+} \frac{v}{-} \quad D_f = (-\infty, -\frac{\varepsilon}{v}] \cup [v, \infty)$$

$$f(u) = \sqrt{\log_{\frac{1}{v}} \log_{\frac{1}{v}}^{(v u + 1)}}$$

$$v u + 1 > 0 \Rightarrow u > -\frac{1}{v}$$

$$\log_{\frac{1}{v}}^{v u + 1} > 0 \Rightarrow v u + 1 > 1 \Rightarrow u > 0$$

$$\log_{\frac{1}{v}} \log_{\frac{1}{v}}^{(v u + 1)} \geq 0 \Rightarrow \log_{\frac{1}{v}}^{(v u + 1)} \leq 1 \Rightarrow v u + 1 \leq v \Rightarrow u \leq \frac{v-1}{v}$$

$$D_f = (0, \frac{v-1}{v}]$$

$$\text{الف) } y = \log(v \cos u + 1)$$

$$v \cos u + 1 > 0 \Rightarrow \cos u > -\frac{1}{v} \quad \text{Unit Circle}$$

$$D_f = (v k \pi - \frac{v \pi}{v}, v k \pi + \frac{v \pi}{v})$$

$$\text{ب) } \sqrt{\log \frac{u-1}{u+1}}$$

$$\log \frac{u-1}{u+1} \geq 0$$

$$\frac{u-1}{u+1} \geq 1 \Rightarrow \frac{u-1}{u+1} - 1 \geq 0 \Rightarrow \frac{u-1-u-1}{u+1} \geq 0 \Rightarrow \frac{-2}{u+1} \geq 0$$

$$\frac{u-1}{u+1} > 0 \Rightarrow \frac{-1}{+} \frac{1}{-} +$$

$$D_f = (-\infty, -1)$$