

$$\text{الف) } y = \sqrt{x - \sqrt{x-m}}$$

$$\textcircled{I} \sqrt{x-m} \geq 0 \\ x-m \geq 0 \\ m \leq x$$

$$\textcircled{II} \sqrt{x-m} \geq 0 \text{ : دالة متزايدة } \Rightarrow$$

$$x - \sqrt{x-m} \geq 0$$

I $\cap$ II

$$19 - (x-m) \geq 0 \Rightarrow D_f = [-14, 2]$$

$$19 - x + m \geq 0$$

$$\text{ب) } \sqrt{x - \sqrt{m-x}}$$

$$\textcircled{II} x - \sqrt{m-x} \geq 0$$

$$9 - (m-x) \geq 0$$

I $\cap$ II

$$m \geq 14$$

$$11 - m \geq 0 \Rightarrow D_f = [2, 11]$$

$$\textcircled{I} \sqrt{m-x} \geq 0$$

$$m-x \geq 0 \Rightarrow m \geq x$$

$$\text{الف) } y = \sqrt{x - 2mx^2}$$

$$\sqrt{x - 2mx^2} \geq 0 \Rightarrow x - 2mx^2 \geq 0$$

$$x \geq 2mx^2$$

$$2 \geq mx$$

$$-2 \leq m \leq 2$$

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

$$\text{ب) } \sqrt{3|m|-9}$$

$$3|m|-9 \geq 0$$

$$3(|m|-3) \geq 0 \Rightarrow |m|-3 \geq 0 \Rightarrow$$

$$|m| \geq 3 \Rightarrow$$

$$\begin{cases} m \geq 3 \\ m \leq -3 \end{cases}$$

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

$$\text{الف) } y = 3 \sqrt{\frac{|m|+1}{|m|-9}}$$

$$\Rightarrow |m|-9 \neq 0$$

$$|m| \neq 9$$

$$D_f = \mathbb{R} - \{\pm 9\}$$

$$\text{ب) } y = 3 \sqrt{\frac{\sqrt{m}+1}{\sqrt{m}-3}}$$

$$\textcircled{I} \sqrt{m} \geq 0 \Rightarrow m \geq 0$$

$$\textcircled{II} \sqrt{m}-3 \neq 0$$

$$\sqrt{m} \neq 3 \Rightarrow m \neq 9$$

$$D_f = [0, +\infty) - \{9\}$$

$$\text{الف) } y = \sqrt{3-|m|}$$

$$\textcircled{I} \sqrt{3-|m|} \geq 0$$

$$3-|m| \geq 0$$

$$3 \geq |m|$$

$$-3 \leq m \leq 3$$

$$|m|+2 \neq 0$$

$$|m| \neq -2$$

$$m \neq \pm 2$$

$$D_f = [-3, 3]$$

$$-\{\pm 2\}$$

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

$$\textcircled{I} \sqrt{x-m^2} \geq 0$$

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

$$m^2 \leq x$$

$$\textcircled{II} |m|-1 \neq 0$$

$$|m| \neq 1$$

$$m \neq \pm 1$$

$$D_f = [-2, 2] - \{\pm 1\}$$

(د) الف دایره دایره؟

$$f(x) = \frac{x+1}{\sqrt{x+1}} \quad \text{for } x \geq -1$$

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

$$f(x) = \frac{1}{\sqrt{x+1}}$$

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

محدوده تعریف
محدوده مقبول

(د) الف دایره دایره؟

$$f(x) = \sqrt{2 - [x]}$$

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

$$[x] \leq 2 \Rightarrow D_f = (-\infty, 3)$$

$$f(x) = \frac{1}{\sqrt{2 - [x]}}$$

$$\sqrt{2 - [x]} > 0$$

$$2 - [x] > 0$$

$$[x] < 2 \Rightarrow D_f = (-\infty, 2)$$

(د) الف دایره دایره؟

$$f(x) = \frac{1}{n[x]}$$

$$D_f = \mathbb{R} - [0, 1)$$

محدوده تعریف
محدوده مقبول

$$f(x) = \frac{1}{\sqrt{-n[x]}}$$

$$\sqrt{-n[x]} > 0$$

$$-n[x] > 0$$

$$n[x] < 0$$

$$[x] = 0 \leq x < 1$$

$$D_f = [0, 1)$$

$$D_f = \left[\frac{1}{n}, +\infty\right)$$

$$f(x) = \sqrt{\left[n - \frac{1}{x}\right] + \left[n + \frac{1}{x}\right]} \geq 0 \Rightarrow \left[n - \frac{1}{x}\right] + \left[n + \frac{1}{x}\right] + 1 \geq 1$$

$$\left[n - \frac{1}{x} + 1\right] + \left[n + \frac{1}{x}\right] \geq 1 \Rightarrow \left[n + \frac{1}{x}\right] + \left[n + \frac{1}{x}\right] \geq 1$$

$$f(x) = \sqrt{\left[n - \frac{1}{x}\right] + \left[-n + \frac{1}{x}\right]}$$

$$\left[n - \frac{1}{x}\right] + \left[-n + \frac{1}{x}\right] \geq 0$$

$$\left[n - \frac{1}{x}\right] + \left[-n + \frac{1}{x}\right] \geq 0 \Rightarrow \left[n - \frac{1}{x}\right] \geq \frac{1}{x} \Rightarrow n - \frac{1}{x} \geq \frac{1}{x} \Rightarrow n \geq \frac{2}{x} \Rightarrow x \geq \frac{2}{n}$$

$$[n] + [-n] \Rightarrow \dots \Rightarrow n - \frac{1}{x} \in \mathbb{Z} \Rightarrow D_f = \left\{n \mid n = n - \frac{1}{x}, k \in \mathbb{Z}\right\}$$

19. $\sin^m x$ دالة

$$الف) y = \frac{1}{\sin^m x - 1} \quad \sin^m x - 1 \neq 0$$

$$\sin^m x \neq 1$$

$$\sin^m x \neq \frac{1}{\sqrt{r}}$$

$$\sin x \neq \pm \sqrt{\frac{1}{r}}$$

$$D_f = \mathbb{R}$$

$$ب) y = \frac{\cot x + 1}{\tan x + 1} \quad \cos x \neq 0, \sin x \neq 0, \tan x \neq -1$$

$$D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right\}$$

10. $\sqrt{1 - \cos x}$ دالة

$$الف) y = \sqrt{1 - \cos x} \quad \sqrt{1 - \cos x} \geq 0$$

$$1 - \cos x \geq 0$$

$$1 - \cos x \geq 0$$

$$\cos x \leq 1$$

$$D_f = \left[k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right]$$

$$ب) y = \sqrt{1 - r \cos x}$$

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

$$1 - r \cos x \geq 0$$

$$r \cos x \leq 1$$

$$\cos x \leq \frac{1}{r}$$

$$D_f = \left[k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{r} \right]$$