

$$f(x) = \sqrt{(a-x)x^2+bx} \quad D_f: [c+\infty)$$

$$a \leq x \leq \frac{a+b}{2} \Rightarrow c(x) + b \leq \frac{b^2-4}{4}$$

1

$$f(x) = \sqrt{x^2+mx+n} \quad D_f: \mathbb{R} \Rightarrow \begin{cases} x \geq 0 \\ x \leq -1+\epsilon n \end{cases} \Rightarrow \begin{cases} \epsilon(m-1)(n+1) \\ +1 \quad -1 \end{cases}$$

$$m+1, -1 \Rightarrow 1-(-1)/2$$

2

$$f(x) = \frac{\sqrt{\epsilon-x^2}}{[x]+[-x]+1} \Rightarrow \epsilon \geq 0 \quad -1 \leq x \leq 1$$

$$\Rightarrow [x]+[-x] \neq -1 \Rightarrow x \in \mathbb{Z}$$

$$D_f = \{-1, 0, 1\} \Rightarrow \begin{cases} \text{if } x \in \mathbb{Z} \Rightarrow [x]+[-x] = 0 \\ \text{if } x \notin \mathbb{Z} \Rightarrow [x]+[-x] = -1 \end{cases}$$

3

$$y = \sqrt{\frac{(x^2-1)(x^2-m^2)}{x^2-1}} \quad \begin{matrix} * & * \\ -1 & 1 \\ + & - & - & + \end{matrix}$$

$$D_f = (-\infty, -1] \cup [0] \cup [c+\infty)$$

$$y = \sqrt{x^2+mx} \Rightarrow \frac{x^2(m+c)}{-x} \geq 0 \quad (c)$$

$$D_f: [c+\infty)$$

4

$$y = \sqrt{\epsilon-|x|} \Rightarrow \epsilon-|x| \geq 0 \quad \begin{cases} |x| \leq \epsilon \\ -\epsilon \leq x \leq \epsilon \end{cases}$$

$$-4 \leq x \leq 2 \quad -1 \leq x \leq 4$$

$$D_f = [-1, 4]$$

$$y = \sqrt{|x-1|-x} \Rightarrow |x-1| \geq x \quad (c)$$

$$x-1 \geq x \quad x \leq 0$$

$$x-1 \leq -x \quad x \leq -1$$

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

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$$y = \frac{1}{\sqrt{|x-0|-1}} \Rightarrow |x-0| < 1$$

$$-1 < x-0 < 1 \Rightarrow -1 < x < 1$$

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

$$y = \sqrt{1-x^2} \Rightarrow x^2 \leq 1$$

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

$$y = \frac{\cos x}{1 + \cos x} \Rightarrow |1 + \cos x| \neq 0$$

$$\cos x \neq -1$$

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

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

$$y = \frac{\sin^2 x - 1}{\cos x} \Rightarrow \cos x \neq 0$$

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

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

$$y = \sqrt{|x+1| - |x+C|} \Rightarrow |x+1| \geq |x+C|$$

$$|x+1| \geq |x+C| \Rightarrow x \geq \frac{C-1}{2}$$

$$D_f = \left[\frac{C-1}{2}, +\infty \right)$$

$$y = \frac{x^2}{|x+1| - |x+C|} \Rightarrow |x+1| \neq |x+C|$$

$$|x+1| \neq |x+C| \Rightarrow x \neq \frac{C-1}{2}$$

$$D_f = \mathbb{R} \setminus \left\{ \frac{C-1}{2} \right\}$$

$$f(x) = \sqrt{\log_{10} \log_{10} (x-1)} \Rightarrow \log_{10} \log_{10} (x-1) \geq 0$$

$$\log_{10} \log_{10} (x-1) \geq 0 \Rightarrow \log_{10} (x-1) \geq 1 \Rightarrow x-1 \geq 10 \Rightarrow x \geq 11$$

$$D_f = [11, +\infty)$$

$$y = \sqrt{\log_{10} \frac{x-1}{x+1}} \Rightarrow \frac{x-1}{x+1} \geq 0$$

$$\frac{x-1}{x+1} \geq 0 \Rightarrow x \leq -1 \text{ or } x \geq 1$$

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

$$y = \log (1 + \cos x)$$

$$1 + \cos x > 0 \Rightarrow \cos x > -1$$

$$x \neq \pi + 2k\pi$$

$$D_f = \mathbb{R} \setminus \{ \pi + 2k\pi \}$$