

$$\text{الف) } f(x) = \sqrt{\log_{\frac{1}{2}} x}$$

$$\begin{aligned} 2x-1 > 0 & \quad x > \frac{1}{2} \\ 2x > 1 & \quad x > \frac{1}{2} \end{aligned}$$

$$\begin{aligned} 2x-1 > 1 & \quad 2x > 2 \quad x > 1 \\ \log_{\frac{1}{2}} x > 0 & \quad x < 1 \end{aligned}$$

$$\begin{aligned} 2x-1 < 1 & \quad 2x < 2 \quad x < 1 \\ \log_{\frac{1}{2}} x < 0 & \quad x > 1 \end{aligned}$$

$$\text{ب) } f(x) = \log \frac{1}{2+\sqrt{x}-|x|}$$

$$|x| \geq 0 \quad R$$

$$\frac{1}{2+\sqrt{x}-|x|} > 0 \rightarrow 2+\sqrt{x}-|x| > 0$$

$$\sqrt{x} = t \quad -t^2 + t + 2 > 0$$

$$\sqrt{\frac{x+2}{x+b}} + a$$

$$\frac{2}{-10} +$$

$$+$$

$$\sqrt{|x|} < 2 \quad |x| < 4 \quad -4 < x < 4$$

$$\frac{2x+2}{x+b} + a \geq 0$$

$$x \neq b$$

$$a = -2$$

$$\frac{2x+2+ax+ab}{x+b}$$

$$= \frac{x(2+a) + 2+ab}{x+b}$$

$$2+b=0$$

$$b = -2$$

$$\sqrt{f(x)-x+1}$$

$$f(x) = \begin{cases} 2x-1 & [x] > 2 \\ 2x+3 & [x] \leq 2 \end{cases}$$

$$f(x)-x+1 \geq 0 \quad x \geq 0$$

$$2x-1 \geq x-1 \quad x \geq 0 \quad (0, +\infty)$$

$$f(x) \geq x-1$$

$$x < 0$$

$$2x+3 \geq x-1 \quad 2x \geq -4 \quad x \geq -2$$

$$[-2, +\infty)$$

$$\frac{2x^3 + 34x^2 + 18x + 3}{(x^2 + x + 1)^2} = \frac{2(12x^3 + 17x^2 + 9x + 1)}{(x^2 + 1)^2} = \frac{2(2x+1)^2}{(x^2 + 1)^2} = \frac{2}{x^2 + 1}$$

$$2x+1 \neq 0 \quad 2x \neq -1 \quad x \neq -\frac{1}{2}$$

$$y = \sqrt{1 - \log(2x-a)}$$

$$1 - \log(2x-a) \geq 0$$

$$\begin{aligned} 2x-a > 0 & \quad 2x > a \\ 2x > a & \quad x > \frac{a}{2} \end{aligned}$$

$$\log_{10} 2x-a \leq 1$$

$$2x-a \leq 10$$

$$2x \leq 10+a$$

$$x \leq \frac{10+a}{2}$$

$$x \leq 5 + \frac{a}{2}$$

$$\frac{a}{2} < x \leq 5 + \frac{a}{2}$$

$$c-b = 5 + \frac{a}{2} - \frac{a}{2} = 5$$