

$$y = \frac{u^2 + u + 1}{u-1} \Rightarrow yu - y = u^2 + u + 1 \Rightarrow u^2 + u - yu + 1 + y = 0 \quad \Delta \geq 0$$

$$b^2 - 4ac \geq 0 \Rightarrow (1-y)^2 - 4 \times 1 \times (1+y) \geq 0 \Rightarrow 1 + y^2 - 2y - 4 - 4y \geq 0 \Rightarrow y^2 - 6y - 3 \geq 0$$

$$\frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{-(1-y) \pm \sqrt{y^2 + 4y + 5}}{2}$$

$$(5, 1] \cup [13, \infty)$$

$$\rightarrow \frac{1}{2} \frac{u^2 - \infty u + 1}{u-1} \rightarrow \frac{-b}{2a} \Rightarrow \frac{\infty}{2} \Rightarrow \frac{1}{2} \frac{2\infty}{1} - \frac{2\infty}{2} + 1 \Rightarrow \left[\frac{1}{2}, +\infty \right)$$

$$\rightarrow \frac{1}{2} \sqrt{u^2 + 4u - 5} \Rightarrow \frac{-b}{2a} = \frac{-4}{-2} = \frac{4}{2} \Rightarrow \frac{2\infty}{1} - \frac{2\infty}{2} + 1 \Rightarrow \frac{1}{2}$$

$$\left[-9 + 11 - 5 \right] = [0, 2] \Rightarrow R_f = [0, 2] \quad \left[\frac{1}{2}, +\infty \right) \Rightarrow R_g = \left[\frac{1}{2}, +\infty \right)$$

$$\Rightarrow \log \left(\frac{u^2 + 4u + 1}{u-1} \right) \Rightarrow SR = R, D = [0, 2] \Rightarrow R_g = R$$

$$\rightarrow \frac{1}{2} \frac{u^2 + 1}{u-1} \Rightarrow \frac{1}{2} \left(\frac{u^2 + 1}{u-1} \right) \Rightarrow \left[0, +\infty \right)$$

$$2) y = \frac{u^2 + 4}{\sqrt{u^2 + 3}} \Rightarrow \frac{u^2 + 3}{\sqrt{u^2 + 3}} + \frac{1}{\sqrt{u^2 + 3}} \Rightarrow \sqrt{u^2 + 3} + \frac{1}{\sqrt{u^2 + 3}} \Rightarrow \min = \frac{4}{3}$$

$$\frac{u^2 + 4}{u^2 - 1} \Rightarrow \left(-\infty, -\frac{1}{2} \right] \cup \left(\frac{1}{2}, +\infty \right)$$

$$y = \frac{u^2 + 4}{u^2 - 1} \Rightarrow \frac{y + 4}{y - 1} = u^2 \Rightarrow \sqrt{\frac{y + 4}{y - 1}} \Rightarrow \left(-\frac{2}{3}, \frac{2}{3} \right)$$

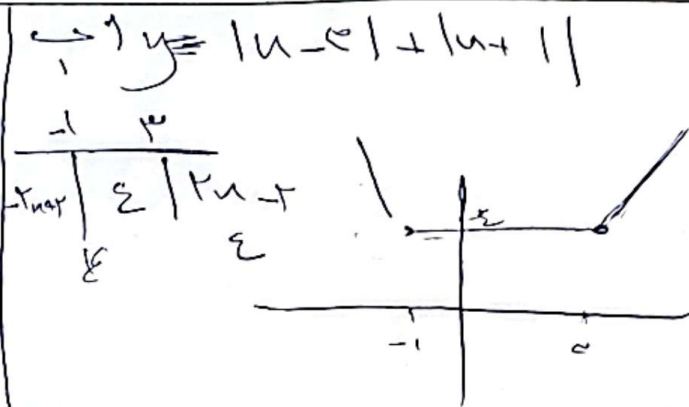
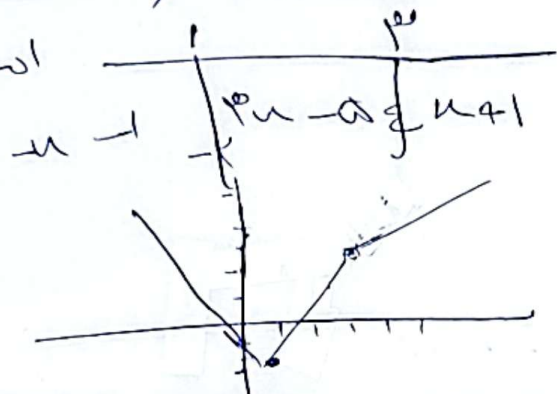
$$\frac{1 \sin u - 1}{\sin u + 1} \Rightarrow \left[-1, \frac{1}{2} \right] \Rightarrow \left[-1, \frac{1}{2} \right]$$

$$\frac{-1 - y - 1}{y - 1} \Rightarrow -1 \leq \frac{-1 - y - 1}{y - 1} \leq 1$$

$$\frac{u^2 - u + \frac{1}{2}}{u^2 - u + 1} \Rightarrow D = R - \frac{1}{2} \Rightarrow \Delta < 0 \Rightarrow D = \frac{1}{2}$$

$$\Rightarrow \frac{u^2 - u + 1}{u^2 - u + 1} - \frac{1}{2(u^2 - u + 1)} \Rightarrow \min(u^2 - u + 1) \Rightarrow \frac{1}{2} - \frac{1}{2} + 1 = \frac{1}{2}$$

$$1 - \frac{1}{2} \Rightarrow [0, 1] \quad \text{نقطه}$$

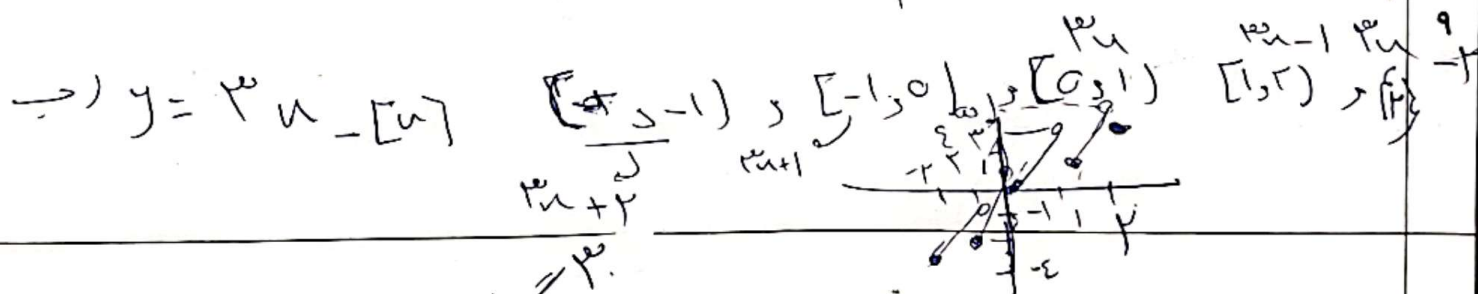
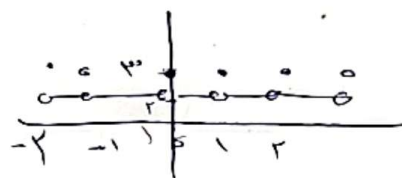


$$|u+1| - |2u+1| \leq 1$$

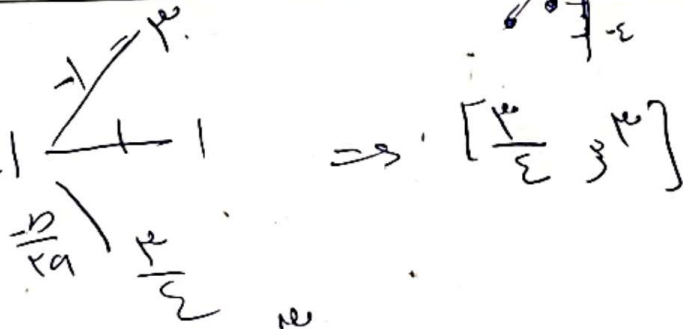
$$\begin{array}{l} -u+1+2u+1 \leq 1 \Rightarrow u \leq -1 \\ u+1-2u-1 \leq 1 \Rightarrow -u-2 \leq 1 \Rightarrow u \geq -3 \end{array}$$

$$[-3, -1] \cup [-\frac{1}{2}, 1] \cup [2, +\infty)$$

$$y = [u] + 3[u] \Rightarrow$$



$$y = \sin^2 u - \sin u + 1$$



$$y = \sin^2 u + \sin u + 1$$

$$-\frac{b}{2a} = -\frac{1}{2} \Rightarrow \sin^2 u = -\frac{1}{2} \Rightarrow \sin u = \pm \frac{1}{\sqrt{2}}$$