

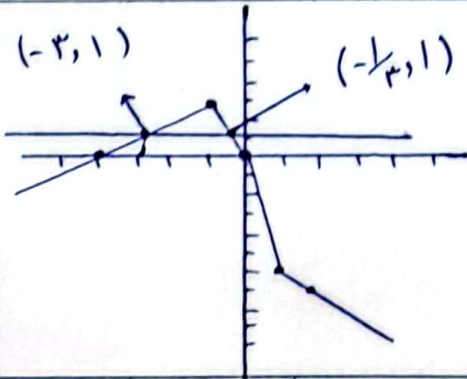
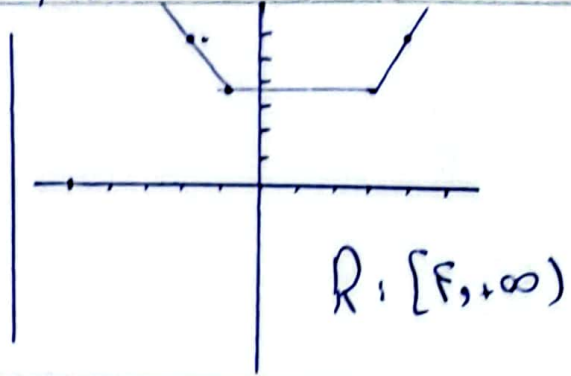
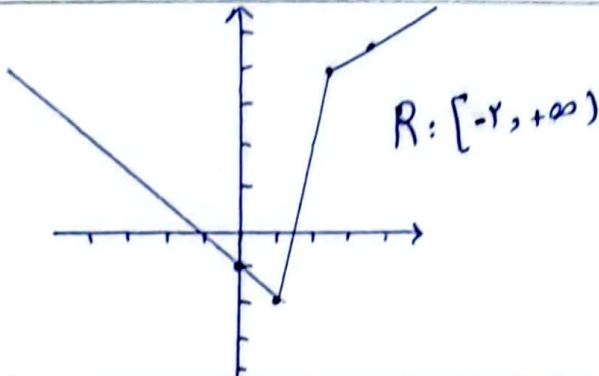
$$D_f: \mathbb{R} - \{ \text{ممنوع} \} \Rightarrow D_f: \mathbb{R}$$

$$u^2 - u + 1 \rightarrow \text{ممنوع}$$

$$x \in \mathbb{R}: y = \frac{(u - \frac{1}{4})^2 + 0}{(u - \frac{1}{4})^2 + \frac{3}{4}} \rightarrow (u - \frac{1}{4})^2 = \frac{3}{4}y \quad [0, 1)$$

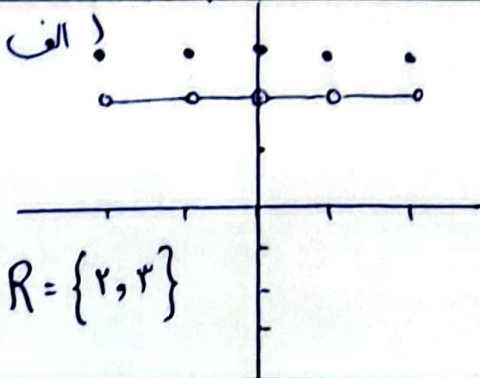
ممنوع 0/0, 1/1 ✓

$$\frac{0}{-1+1} = \frac{0}{0}$$



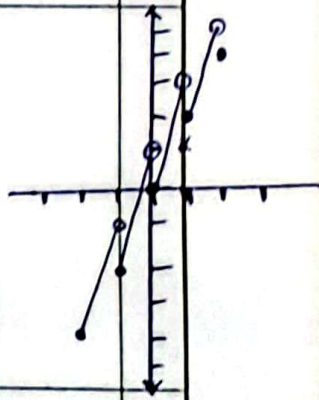
$$D_f: \leftarrow \frac{1}{2} \rightarrow$$

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



$$3u - [u]$$

$-2 \leq u < -1 \rightarrow 3u + 2$	$\frac{-2}{-1} = 1$	$\frac{-1}{-1} = 1$
$-1 \leq u < 0 \rightarrow 3u + 1$	$\frac{-1}{-1} = 1$	$\frac{0}{-1} = 0$
$0 \leq u < 1 \rightarrow 3u$	$\frac{0}{0} = 0$	$\frac{1}{1} = 1$
$1 \leq u < 2 \rightarrow 3u - 1$	$\frac{1}{1} = 1$	$\frac{2}{2} = 1$
$2 \rightarrow 3u - 2$	$\frac{2}{2} = 1$	$\frac{3}{3} = 1$



$$\sin u = t \quad \star \quad \text{بموجب} \quad [-1, 1]$$

$$\rightarrow t^2 - t + 1 = y$$

$$t = \frac{-1}{2} = -\frac{1}{2} \rightarrow \frac{1}{4} - \frac{1}{2} + 1 = \frac{3}{4}$$

$$\Rightarrow R_f: [\frac{3}{4}, 3]$$

$$t = \sin u$$

$$y = t^2 - t + 1$$

$$t = -\frac{1}{2} \rightarrow \frac{1}{4} - \frac{1}{2} + 1 = \frac{3}{4}$$

$$\Rightarrow R_f: [1, 3]$$