

$$g = \frac{x^2 + x + 2}{x-1} \Rightarrow xy - y = x^2 + x + 2 \Rightarrow x^2 + (1-y)x + 2+y = 0$$

$$\Delta = (1-y)^2 - 4(2+y) \Rightarrow \frac{y-1 \pm \sqrt{(1-y)^2 - 4(2+y)}}{2} \quad \frac{-1}{2} \quad \frac{y}{2}$$

$$\sqrt{(1-y)^2 - 4(2+y)} \Rightarrow 1 - 2y + y^2 - 8 - 4y \geq 0 \Rightarrow y^2 - 6y - 7 \geq 0 \Rightarrow (y-7)(y+1) \geq 0$$

$$RP = IR - (-1, 7)$$

$$x^2 - 2x + 1 \Rightarrow x_{min} = \frac{\Delta}{2} \Rightarrow y_{min} = 2x \frac{2\Delta}{14} - \frac{2\Delta}{x} + 1 \Rightarrow$$

$$\Rightarrow IRP = [-\frac{14}{\Delta}, +\infty)$$

$$\frac{-\frac{2\Delta}{x}}{\Delta} - \frac{-\frac{2\Delta}{x}}{\Delta} + \frac{1}{\Delta} = \left(\frac{-14}{\Delta}\right)$$

$$\sqrt{-x^2 + 4x - 4} \Rightarrow x_{max} = \frac{-4}{-2} = 2 \text{ و } y_{max} = -4 + 1\Delta - \Delta = 4$$

$$= R_{-x^2+4x-4} = (-\infty, 4] \Rightarrow R_{\sqrt{-x^2+4x-4}} = [-2, 2]$$

$$\sqrt{x^2 - 3x^2 + 4x + 1}$$

برای تابع مشتق های 0 و 1 است
 $\Rightarrow R = [0, +\infty)$

$$\frac{3x+1}{2x-4}$$

تابع همگرا نیست
 است

$$= RP = IR - \{ \text{میانگین} \}$$

$$\Rightarrow RP = IR - \left\{ \frac{3}{2} \right\}$$

$$\sqrt{\frac{3x+1}{x-2}}$$

تابع همگرا نیست

$$\Rightarrow RP = IR - \{ \text{میانگین} \}$$

$$IR - \{ 2 \}$$

$$\Rightarrow \text{برای تابع} = [0, +\infty) - \{ 2 \}$$

$$\frac{x^r + \varepsilon}{\sqrt{x^r + r}}$$

$$\Rightarrow IR = \left[\frac{r}{\sqrt{r}}, +\infty \right)$$

$$x^r + \frac{1}{x^r + \varepsilon} \xrightarrow{x + \frac{1}{x}} \left[\frac{1}{r}, +\infty \right)$$

$$\frac{rx^r + \varepsilon}{x^r - 1}$$

$$\xrightarrow{x^r > 0} \frac{r}{-1} = -r \Rightarrow [-r, r]$$

$$\xrightarrow{\frac{r \infty^r}{\infty^r} = r}$$

$$\xrightarrow{rx^r + \varepsilon = yx^r - g \Rightarrow (r-y)x^r + \varepsilon + g = 0}$$

$$\Rightarrow x = 0 - r(r-y)(r+y) = 1r + ry - \varepsilon y - g^r$$

$$\Rightarrow x = \frac{-r + \sqrt{g^r - g + 1r}}{r(r-y)}$$

$$\Rightarrow -g^r - g + 1r > 0 \Rightarrow -(g+r)(g-r) > 0$$

$$-(y^r + y - 1r) > 0$$

$$\boxed{IR = [-r, r]}$$

$$-\frac{-r}{2} = \frac{r}{2}$$

$$\frac{r \sin - 1}{\sin + r}$$

$$-1 < \sin < 1$$

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

$$, \frac{r-1}{1+r} = \frac{1}{\varepsilon}$$

$$\left. \vphantom{\frac{-r-1}{-1+r}} \right\} R_+ = \left[-\frac{r}{r}, \frac{1}{\varepsilon} \right]$$

$$\xrightarrow{y \sin + ry = r \sin - 1}$$

$$= (y-r) \sin = -(ry+1) \Rightarrow \sin = \frac{(-ry-1)}{y-r}$$

$$-1 \leq \frac{-ry-1}{y-r} \leq 1$$

$$\Rightarrow -y+r \leq -ry-1$$

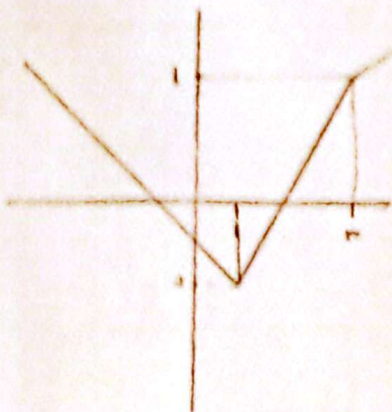
$$\Rightarrow ry \geq -r \Rightarrow y \geq -\frac{r}{r}$$

$$-ry-1 \leq y-r$$

$$\Rightarrow 1 \geq ry \Rightarrow \frac{1}{r} \geq y$$

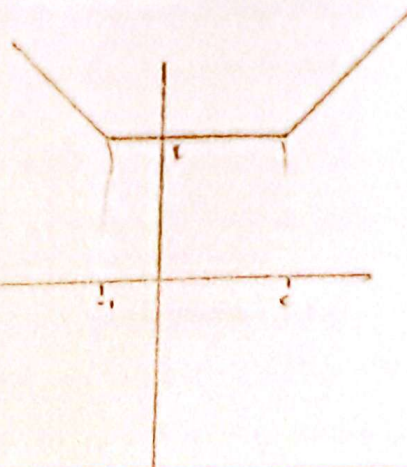
$$\Rightarrow IR = \left[-\frac{r}{r}, \frac{1}{\varepsilon} \right]$$

$$y = |x-1| + |x-r|$$



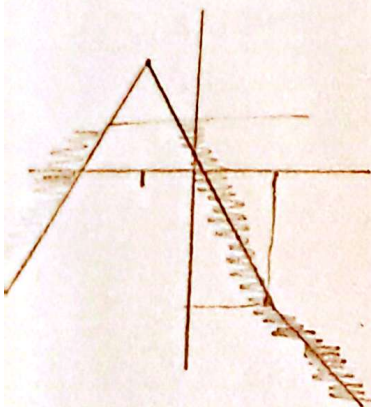
$$\begin{array}{c|c|c} x & 1 & r \\ \hline y = |x-1| + |x-r| & r-1 & r \\ \hline \end{array}$$

$$\Rightarrow RP = [-1, +\infty)$$



$$y = |x+1| + |x+1| \Rightarrow RP = [-1, +\infty)$$

$$|x-r| - |r-x-r| \leq 1$$



$$\begin{array}{c|c|c} x & r & 2r \\ \hline y = |x-r| - |r-x-r| & 0 & 1 \\ \hline \end{array}$$

$$x+r \leq 1$$

$$x \leq -r$$

$$\rightarrow \text{No solution}$$

$$-r \leq x \leq 1$$

$$\boxed{x \geq -\frac{1}{r}}$$

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

$$\rightarrow \text{No solution}$$

$$-x - 1 < +1$$

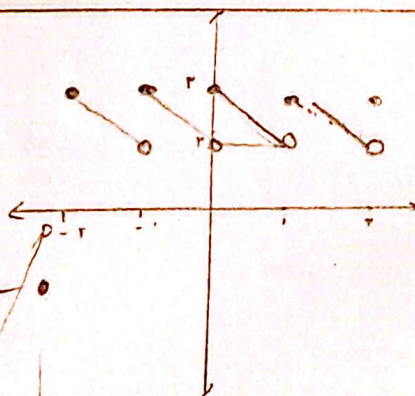
$$-x < 2 \Rightarrow x > -2$$

$$\boxed{x > -2} \quad \checkmark$$

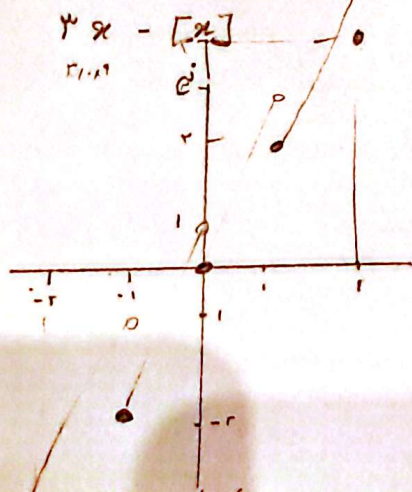
$$x > r$$

$$\rightarrow \text{No solution}$$

$$y = [x] + [r-x]$$



$$R = (r, r]$$



$$R = [-r, 0)$$

$$\begin{array}{lcl} \sin^r - \sin + 1 & \begin{array}{l} \rightarrow 1 \\ \rightarrow 1/r \\ \rightarrow \cdot \end{array} & \begin{array}{l} 1 - 1 + 1 = 1 \\ \frac{1}{2} - \frac{1}{r} + 1 = \frac{r}{2} \\ \cdot - \cdot + 1 = 1 \end{array} \end{array}$$

$$R = \left[\frac{r}{2}, 1 \right]$$

$$\begin{array}{lcl} \sin^2 + \sin^r + 1 & \begin{array}{l} \rightarrow 1 \\ \rightarrow 1/r \\ \rightarrow \cdot \end{array} & \begin{array}{l} \rightarrow \infty \\ \rightarrow \frac{1}{10} + \frac{1}{n} + 1 \\ \rightarrow \cdot + \cdot + 1 \end{array} \end{array}$$

$$R = [\cdot, \infty)$$