

$$\rightarrow -2 \leq \frac{r_{m+1}}{\delta} \leq 4 \rightarrow -12 \leq r_m \leq 12 \rightarrow -4 \leq m \leq 4$$

$$\rightarrow D_f' = [-4, 4]$$

$$D = [-2, 2] \rightarrow -2 \leq x \leq 2 \rightarrow -12 \leq r_m - 2 \leq 2$$

$$\rightarrow D_f = [-12, 2]$$

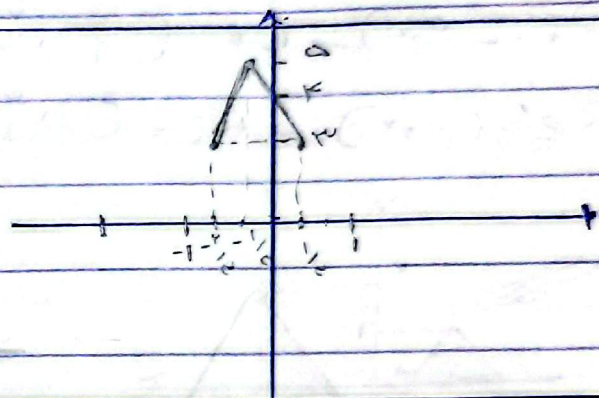
$$\rightarrow D_f(m) = ? \rightarrow -1 \leq m \leq 1 \rightarrow -1 \leq \frac{r_{m+1}}{r} \leq 1$$

$$D_f(r-\infty) = ? \rightarrow -1 \leq r-\infty \leq 1 \rightarrow -\frac{r}{\delta} \leq m \leq \frac{r}{\delta}$$

$$D_f' = \left(-\frac{r}{\delta}, \frac{r}{\delta}\right)$$

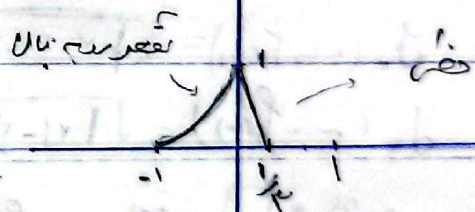
$$D_f' = \frac{m-1}{r} \Rightarrow D_f' = \left[-\frac{r}{\delta}, \frac{r}{\delta}\right]$$

$$R_f' = ry + r \rightarrow R_f' = [r, \infty)$$



$$D_f = [1, 0] \rightarrow D_f' = \frac{r-x}{r} = [-1, \frac{1}{r}]$$

$$R_f = [0, 2] \rightarrow R_f' = \frac{1}{r}y = [0, 1]$$



$$y = -\frac{1}{r}x^2 + \frac{r}{\delta}x + 1 \rightarrow \omega_1 \left| \begin{array}{l} -\frac{b}{2a} = \frac{\frac{r}{\delta}}{2 \times (-\frac{1}{r})} = \frac{r^2}{2\delta} \\ -\frac{1}{r} \times \frac{r^2}{2\delta} + \frac{r}{\delta} \times \frac{r}{\delta} + 1 = \frac{r^2}{2\delta} + \frac{r^2}{\delta} + 1 = \frac{3r^2}{2\delta} \end{array} \right.$$

$$\left| \begin{array}{l} \frac{r}{\delta} \\ \frac{r^2}{2\delta} \end{array} \right| \xrightarrow{\omega_2} \left| \begin{array}{l} r \\ r \end{array} \right| \Rightarrow y' = \frac{-1}{r} (x-r)^2 + r$$

$$\Rightarrow \omega_3 \text{ مفرد، } \frac{-1}{r} (1-r)^2 + r = 0 \rightarrow (1-r)^2 = -r \rightarrow 1-r = \pm \sqrt{-r} \rightarrow x = \sqrt{-r} \text{ یا } 1$$

$$x \rightarrow x' = \frac{x+r}{r} \rightarrow A \mid \frac{1}{r} \xrightarrow{J_{(A,r)}} A' \mid \frac{-1/r}{-r} \rightarrow \boxed{AB = \frac{1}{r}}$$

$$y \rightarrow y' = 1 - ry$$

$$D_F = (a, r) \rightarrow D_{F'} = (a+1, \infty) \rightarrow D_G = D_F \cap D_G \rightarrow \text{چون دایره باز است}$$

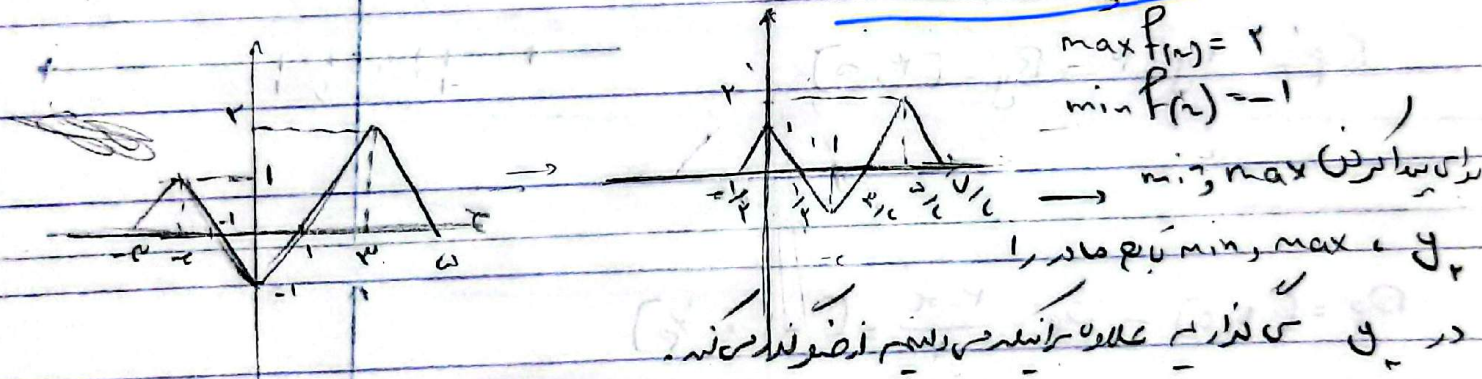
$$D_G = [-1, b) \rightarrow D_{G'} = [-r, b-1)$$

$$a+1 = -r \rightarrow a = -r-1 \rightarrow a-b = -r-1-b = -9$$

$$b-1 = \infty \rightarrow b = \infty$$

$$D_{F'} = [-r-1, \infty) \rightarrow D_F = [-1/r, 1/r] \rightarrow \boxed{D_{G'} = [-1/r, 1/r]}$$

$$R_{F'} = [-1, r] \rightarrow R_F = [-1, r] \rightarrow \boxed{R_{G'} = [0, \sqrt{a}]}$$



$$y_r(\max f(x)) = \sqrt{|r \cdot 1 - r|} = 1 \rightarrow \boxed{\max y_c = 1}$$

$$y_r(\min f(x)) = \sqrt{|r \cdot (-1) - r|} = \sqrt{a}$$

$$f(x) = \left| \frac{x+1}{rx+1} \right| \xrightarrow{x=1-x} f(x) = \left| \frac{m-1}{r-m-r} \right| \xrightarrow{m=1-x} f(x) = g(x) = \left| \frac{m-1}{rx-m} \right| + 1$$

$$m + g(x) < 0 \rightarrow g(x) \geq 1 \rightarrow x < -1 \rightarrow x + \left| \frac{x-1}{rx-m} \right| + 1 < 0$$

$$x + \frac{x-1}{rx-m} + 1 < 0 \rightarrow \frac{rx^2 - rx - 1 + rx - m}{rx-m} < 0$$

$$\frac{rx^2 - rx - 1 + rx - m}{rx-m} < 0 \rightarrow \frac{rx^2 - 1 - m}{rx-m} < 0$$

$$\frac{rx^2 - 1 - m}{rx-m} < 0 \rightarrow \boxed{D_F = (-\infty, \sqrt{a})}$$