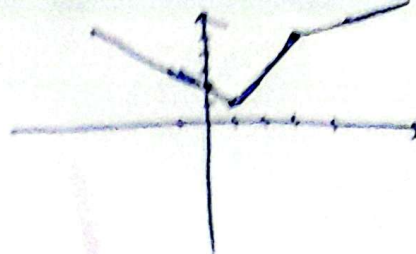


 CamScanner

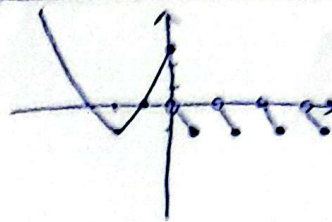
$$f(u) = \begin{cases} u+r; & u \geq r \\ u^2 - ru + r; & 0 \leq u < r \\ |u|+r; & u < 0 \end{cases}$$



② -v

$$R_f = [1, +\infty)$$

$$f(u) = \begin{cases} u^2 + 2u + r; & u \leq 0 \\ \frac{1}{r} - u; & 0 < u < 1 \\ [ru] - ru; & u \geq 1 \end{cases}$$



② -u

$$R_f = [-1, +\infty)$$

$$y = a + 1 - \sqrt{ru + r}$$

$$D_y = [b, +\infty)$$

$$R_y = (-\infty, a]$$

$$ru + r \geq 0 \Rightarrow u \geq -\frac{r}{r} \Rightarrow b = -\frac{r}{r}$$

$$a + 1 = a \Rightarrow a = 1$$

$$a \times b = -\frac{r}{r} \in (-4)$$

②

$$f(u) = r\sqrt{u+1} + r\sqrt{1-u}$$

$$u \geq -1, u \leq 1 \Rightarrow D_f = D_g = [-1, 1]$$

② -1

$$f(u) + g(u) = r\sqrt{r+1}\sqrt{1-u^2}$$

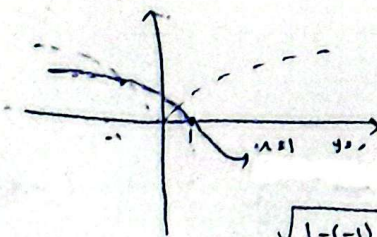
$$D_f = D_g$$

$$\hookrightarrow r\sqrt{(1-u)(1+u)} \xrightarrow{r \cos u} r(\sqrt{1-u} + \sqrt{1+u})^2 \xrightarrow{\sqrt{r}} r(\sqrt{1-u} + \sqrt{1+u})$$

$$f(u) + g(u) = r\sqrt{1-u} + r\sqrt{1+u} \Rightarrow r\sqrt{u+1} + r\sqrt{1-u} + g(u) = r\sqrt{1-u} + r\sqrt{1+u}$$

$$g(u) = -\sqrt{1-u} + \sqrt{1+u}$$

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



$$\sqrt{1-(-1)} = \sqrt{2}$$

$$R = \left[\frac{r-1}{r}, \frac{r+1}{r} \right] = [0, \sqrt{2}]$$