

$$f(x) = \sqrt{1-x^2}$$

$$g(x) = [-1, 1] \quad (-, \varepsilon) \quad (r, 0) \quad (1, r)$$

$$rg = (-1, r) \quad (0, 1) \quad (r, 0) \quad (1, \varepsilon)$$

$$rf = (-1, 0) \quad (0, r) \quad (1, 0)$$

$$rg = rf = [(-1, r) \quad (0, \omega) \quad (1, \varepsilon)] \rightarrow r + \omega + \varepsilon = 1$$

$$I \quad f(x) = rx - 1 \quad D_f = [r, +\infty) \rightarrow r(r) - 1 = \omega \rightarrow R_f = [\omega, +\infty)$$

$$g(x) = \frac{1}{r}x + r \quad D_g = (-\infty, r] \rightarrow \frac{1}{r}(r) + r = \varepsilon \rightarrow R_g = (-\infty, \varepsilon]$$

$$R_f \cup R_g = (-\infty, \varepsilon] \cup [\omega, +\infty)$$

$$II \quad \frac{-x^r}{r} + x + r = \frac{r}{r} \rightarrow -x^r + rx + r = r \rightarrow -x^r + rx + r = 0$$

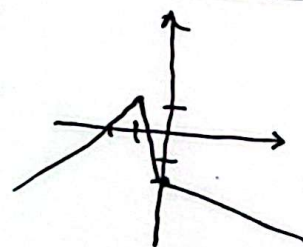
$$(x-r)(x+r) \quad \begin{cases} x=r \\ x=-1 \end{cases} \quad \max = \sqrt{b-a} = \sqrt{r-(-1)} = r$$

$$E \quad \begin{array}{c|c|c|c} & 1 & r & r \\ \hline -\varepsilon x + 1 & -rx + r & rx - r & \varepsilon x - 1 \\ \hline \varepsilon & r & & \varepsilon \\ \hline x-r & |r-1| + |r-r| + |\varepsilon-\varepsilon| = r & & \end{array}$$

Circle

$$Q \quad f: |x| - r|x+1| \quad \begin{array}{c|c|c} & -1 & 0 \\ \hline x+r & -rx-r & -x-r \\ \hline \end{array}$$

$$R_f = (-\infty, 1]$$



$$I \quad \frac{x^r + \omega x + m}{x+1} = g \quad x^r + \omega x + m = gx + g \rightarrow x^r + (\omega - g)x + (m - g) = 0$$

$$\Delta \geq 0 \quad (\omega - g)^r - \varepsilon x |x m - g \cdot g^r - \varepsilon m - 4g + 12 \xrightarrow{-\frac{6}{12}} 4 - \varepsilon m - 12 + 12$$

$$14 - \varepsilon m \geq 0 \rightarrow m \leq \frac{14}{\varepsilon}$$

$$x+1 \neq 0 \quad x \neq -1 \quad \frac{x^r + (\omega - g)x + (m - g)}{x+1} m - \varepsilon = 0 \rightarrow m = \varepsilon \rightarrow g = -1 \quad x$$

$$m \Rightarrow m < \varepsilon \rightarrow [1, r, \mu]$$

$$V \quad f(x) = \begin{cases} x+r & x \geq r \xrightarrow{x=r} [\omega, +\infty) \\ x-rx+r & 0 \leq x < r \xrightarrow{x=0} [1, \omega) \\ |x|+r & x < 0 \xrightarrow{x=0} (r, +\infty) \end{cases} \quad \cap = [1, +\infty)$$

1. $f(x) = \begin{cases} x^2 + 5x + 6 & x \leq 0 \\ x + \frac{-6}{x} & x > 0 \end{cases} \rightarrow y = 5 + 5(-1) + 6 = -1$
 $[-1, +\infty)$
 $[f(x)] = x^2 \quad x > 0 \rightarrow [-1, 0]$
 $R_f = D = [-1, +\infty)$

2. $y = a + 1 - \sqrt{\mu x + \nu} \quad \mu x + \nu \geq 0 \rightarrow x \geq -\frac{\nu}{\mu} \quad b = -\frac{\nu}{\mu}$
 $x = -\frac{\nu}{\mu} \rightarrow y = a + 1 - \sqrt{0} \rightarrow y = a + 1 \quad a + 1 = \infty \rightarrow a = \infty$
 $[-\infty, \infty)$
 $ab = -\frac{\nu}{\mu} \times \infty = -\infty$

3. $y = \sqrt{x+1} + \varepsilon \sqrt{1-x} \rightarrow x+1 \geq 0 \rightarrow x \geq -1$
 $1-x \geq 0 \rightarrow 1 \geq x$
 $[-1, 1]$
 $R_f = D_g$
 $y = \frac{f(x)}{q} - \frac{g(x)}{r} \rightarrow \frac{f(x)}{q} - \frac{f+g}{\mu+r} + \frac{f(x)}{r} = \frac{f(x)}{r} - \frac{f(x)+f(q)}{\mu}$
 $\rightarrow \frac{\sqrt{x+1} + \varepsilon \sqrt{1-x}}{r} = \frac{\mu \sqrt{x+1} + \varepsilon \sqrt{1-x}}{\mu} = \sqrt{x+1} + \varepsilon \sqrt{1-x} - \sqrt{4r \sqrt{1-x}}$
 $x \geq 1 \rightarrow \sqrt{\mu}$
 $x = -1 \rightarrow 0$
 $\rightarrow R_{\frac{f(x)}{r} - \frac{g(x)}{\mu}} = [0, \sqrt{\mu}]$