

امین نیرطاسی

یازم به

امین نیرطاسی

1

$$f(x) = \sqrt{1-x^2}, \quad g(x) = \{(-1, 1), (0, 1), (1, 1)\}$$

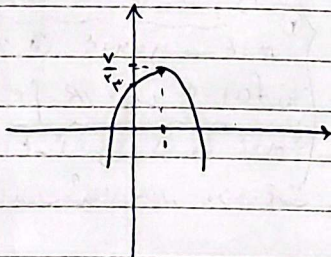
$$f(-1) = \sqrt{1-1} = 0, \quad f(0) = \sqrt{1-0} = 1, \quad f(1) = \sqrt{1-1} = 0$$

$$f(x) = \sqrt{1-x^2} \rightarrow f(x) = \{(-1, 0), (0, 1), (1, 0)\}$$

$$f(x) = \sqrt{1-x^2} \rightarrow x = 1 \rightarrow f(x) = 0 \rightarrow R_f(x) = [0, +\infty)$$

$$g(x) = \frac{1}{x} \rightarrow x = 1 \rightarrow g(x) = 1 \rightarrow R_g(x) = [1, +\infty)$$

$$y = \frac{-x^2}{r} + x + r = -\frac{1}{r}x^2 + x + r \rightarrow A = \left| \frac{-b}{2a} \right| = \left| \frac{-1}{-2/r} \right| = \frac{r}{2}$$



$$y = \frac{r}{r} - \frac{x^2}{r} + x + r \rightarrow -\frac{x^2}{r} + x + r = 0$$

$$x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a}, \quad x_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

$$x_1 = \frac{-1 + \sqrt{1 - 4(-1/r)(r)}}{-2/r} = \frac{-1 + \sqrt{1 + 4}}{-2/r} = \frac{-1 + \sqrt{5}}{-2/r}$$

$$(a, b) = (-1, r) \rightarrow \begin{cases} a = -1 \\ b = r \end{cases} \rightarrow \sqrt{b-a} = \sqrt{r-(-1)} = \sqrt{r+1}$$

$$\text{Cal } (r) \rightarrow \sqrt{b-a} = \sqrt{r+1}$$

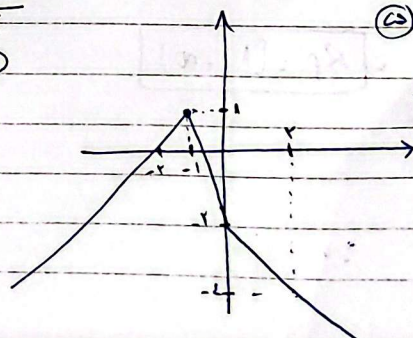
$$y = \frac{1}{x} + |x-1| + |x+1|$$

$$\text{Cal } (r) \rightarrow \text{min } y = 1$$

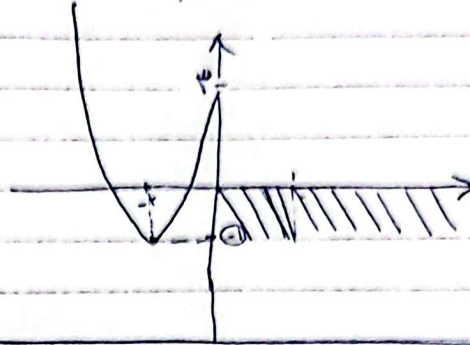
$$y = |x-1| + |x+1|$$

$$y = |x-1| + |x+1| \rightarrow y = \begin{cases} x-1+x+1 = 2x & x \geq 1 \\ -(x-1)+x+1 = 2 & -1 \leq x < 1 \\ -(x-1)-(x+1) = -2x & x < -1 \end{cases}$$

$$\Rightarrow R_y = (-\infty, 1]$$

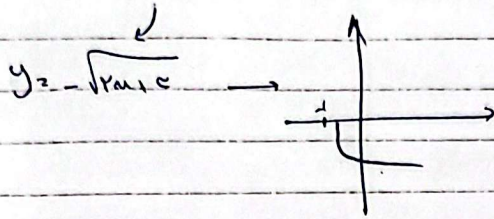


$$f(x) = \begin{cases} x^2 + 2x + 1 & ; x \leq 0 \\ [x^2] - 2x & ; x > 0 \end{cases}$$



$$\Rightarrow R_{f(x)} = [-1, +\infty)$$

$$y = a + 1 - \sqrt{2x + 1} \rightarrow D_y = [b, +\infty), R_y = (-\infty, a]$$



$$f(x) = x\sqrt{x+1} + x\sqrt{1-x}, f(x) + g(x) = x\sqrt{x+1}\sqrt{1-x}, D_f = D_g \quad (10)$$

$$R_y = \frac{f(x)}{x} - \frac{g(x)}{x} \rightarrow D_{f(x)} = [-1, +1], D_g = [-1, +1]$$

$$\begin{aligned} f(1) &= x\sqrt{x} & f(-1) &= x\sqrt{x} & \Rightarrow \begin{cases} g(1) = +\sqrt{x} \\ g(-1) = -\sqrt{x} \end{cases} & \Rightarrow g(x) &= [-\sqrt{x}, \sqrt{x}] \\ f(1) + g(1) &= x\sqrt{x} + \sqrt{x} & f(-1) + g(-1) &= x\sqrt{x} - \sqrt{x} \end{aligned}$$

$$y = \frac{f(x)}{x} - \frac{g(x)}{x} \rightarrow \left\{ \left(1 - \frac{\sqrt{x}}{x}\right) \left(1 + \frac{\sqrt{x}}{x}\right) \right\}$$

$$R_y = \left[\frac{\sqrt{x}}{x}, \sqrt{x} \right]$$