

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

$$g(x) = \{(-1, 1), (0, 4), (2, 0), (1, 2)\}$$

$$2g - 3f = \{(-1, 2), (0, 5), (1, 4)\}$$

$$f(x) = 2x - 1 \quad Df = [3, +\infty)$$

$$\left. \begin{array}{l} \min f = 5 \\ \max f = +\infty \end{array} \right\} \rightarrow Rf = [5, +\infty) \quad I$$

$$g(x) = \frac{1}{3}x + 3 \quad Dg = (-\infty, 3] \\ \left. \begin{array}{l} \max g = 4 \\ \min g = -\infty \end{array} \right\} \rightarrow Rg = (-\infty, 4] \quad II$$

$$\Rightarrow Rf \cup Rg = I \cup II = (-\infty, 4] \cup [5, +\infty)$$

$$y = \frac{-x^2}{2} + x + 3 \rightarrow \frac{-x^2}{2} + x + 3 > \frac{3}{2} \xrightarrow{x^2} -x^2 + 2x + 3 > 0 \xrightarrow{x \neq 0} x^2 - 2x - 3 < 0$$

$$\rightarrow (x-3)(x+1) < 0 \rightarrow -1 < x < 3 \rightarrow (a, b) = (-1, 3)$$

$$\frac{-1}{+} \quad \frac{3}{-} \quad \frac{+}{+}$$

$$\Rightarrow \sqrt{b-a} = \sqrt{3-(-1)} = \sqrt{4} = 2$$

$$y = |x-1| + |x-3| + |x-5|$$

$$\begin{array}{ccccccc} & 1 & & 3 & & 5 & \\ \text{---} & \text{---} & \text{---} & \text{---} & \text{---} & \text{---} & \text{---} \\ -x+1 & 2x-4 & x-2 & x-3 & x-5 & & \end{array}$$

$$y = |x| - 2|x+1|$$

$$\begin{array}{ccccccc} & -1 & & 0 & & & \\ \text{---} & \text{---} & \text{---} & \text{---} & \text{---} & \text{---} & \text{---} \\ 2x+2 & -x-2 & -x-2 & -x-2 & & & \end{array}$$

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



