

$$f(x) \geq 0 \Rightarrow \begin{cases} x \geq 0 \\ f(x) \geq 0 \Rightarrow x = [2, 9] \cup [-4, -2] \end{cases} \Rightarrow D_f = [2, 9]$$

$$\begin{cases} f(x) \neq 0 \\ \frac{-x}{f(x)} \geq 0 \end{cases} \Rightarrow x = (0, 2] \cup [-4, -2) \Rightarrow x \in \mathbb{R}$$

$$-f(2) = -4 - 4 + 4 = -4 \Rightarrow f(2) = -4 \Rightarrow f(x) = x^2 - 4x \Rightarrow f(-4) = 10$$

$$f\left(\frac{1}{2}\sqrt{2}\right) + f(2) = 1 + 2 - 2 = 1$$

$$f(x-1) = ax^2 - 2ax + a - bx + b + 1 \Rightarrow f(x-1) - f(x) = -2ax + a + b \Rightarrow -2ax + a + b = 4x + 1 \Rightarrow a + b = 4 \Rightarrow -2 + b = 4 \Rightarrow b = 6 \Rightarrow a - b = -4$$

$$x^2 = (\sqrt{2} - 1)^2 = 2 - 2\sqrt{2} + 1 = 3 - 2\sqrt{2} \Rightarrow \frac{2-1}{2-1} = \frac{2}{2}$$

$$x^2 + 2x = 3 - 2\sqrt{2} + 2\sqrt{2} - 1 = 2$$

$$\frac{x^2+1}{x^2} = x^2 + \frac{1}{x^2} = \left(x - \frac{1}{x}\right)^2 + 2 \Rightarrow 9 + 2 = 11$$

$$g(x) = \left\{ (2, \sqrt{2}), (1, \sqrt{2}), (0, 2) \right\}$$

$$f\left(\frac{1}{2}\right) = \left\{ (2, 0), (1, \frac{1}{\sqrt{2}}), (0, \frac{1}{2}) \right\}$$

$$g\left(\frac{1}{2}\right) = \left\{ (1, \frac{1}{\sqrt{2}}), (0, \frac{1}{2}) \right\}$$

$$\text{الف) } 2f(x) = \sum (2, 2) \text{ و } (3, 1) \text{ و } (-8, 4) \text{ و } (1, -4) \}$$

(9)

$$\text{ب) } f(x) + 1 = \sum (2, 2) \text{ و } (3, 8) \text{ و } (-8, 3) \text{ و } (1, -1) \}$$

$$\text{ج) } 2f'(x) + 1 = \sum (2, 4) \text{ و } (3, 4) \text{ و } (-8, 13) \text{ و } (1, 13) \}$$

$$\text{د) } f'(x) = \sum (1, 1) \text{ و } (3, 4) \text{ و } (-8, 2) \text{ و } (1, -2) \}$$

$$\text{الف) } f(x) = \sum (1, 4) \text{ و } (2, 2) \text{ و } (3, 4) \}$$

(10)

$$\text{ب) } \frac{f}{g} = \sum (2, 6) \text{ و } (3, -2) \}$$