

۱۷, ۸

$$x f(x) \geq 0$$

$$\downarrow \rightarrow -5, 2, 5$$

$$\begin{array}{ccccccc} -4 & -5 & 0 & 2 & 5 \\ \hline - & + & - & + & - \end{array} \Rightarrow f(x) \in [-5, 0] \cup [2, 5]$$

۲

۱

$$\frac{-x}{f(x)} \geq 0$$

$$\rightarrow -3, 2, 5$$

$$\begin{array}{ccccccc} 2 & 3 & 5 & 2 & 5 \\ \hline - & + & - & + & - \end{array} \Rightarrow (-3, 0) \cup (0, 2)$$

۲

۲

با مرتبه به شکل تعداد اعداد صحیح: ۱، ۲، ۳

$$x=2 \Rightarrow f(1)-2f(2)=2-4+2=0 \Rightarrow f(2)=2$$

$$x=-2 \Rightarrow f(-2)=-2+2+4+2=6$$

$$2f(2)$$

۲

۳

$$f(5)=5-\sqrt{5+2}=5-3=2$$

$$f(2)=2 \times 2 + 3 = 7$$

$$f(1)=1 \times 1 + 3 = 4$$

$$f(f(5)) + f(f(1)) = 7 + 4 = 11$$

۲

۴

$$f(0)=2+a-b$$

$$f(0)-f(1)=4+2=6$$

$$f(0)=2$$

$$2=2+a-b+1$$

$$-1=a-b \rightarrow a-b=-1$$

۲

۵

$$\frac{x^2 + 2x + 2}{x^2 + 2x + 1} = \frac{(x+1)^2 + 1}{(x+1)^2 + 1} = \frac{(\sqrt{x+1})^4 + 1}{(\sqrt{x+1})^4 + 1} = \frac{x}{x} = 1$$

$$x - \frac{1}{x} = -2$$

$$x^2 \cdot \frac{1}{x^2} = (x - \frac{1}{x})^2 + 2 \rightarrow (x - \frac{1}{x})^2 = x^2 + \frac{1}{x^2} - 2(x)(\frac{1}{x}) = x^2 + \frac{1}{x^2} - 2$$

$$(-2)^2 - 2 = x^2 + \frac{1}{x^2} \quad x^2 + \frac{1}{x^2} = (x - \frac{1}{x})^2 + 2 \rightarrow f(x) = x^2 + 2$$

$$9 - 2 = x^2 + \frac{1}{x^2} = 7 \quad f(-2) = (-2)^2 + 2 = 4 + 2 = 6$$

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

$$D_g = [-1, 1]$$

$$D_{f \wedge g} = \{1, 1, 0\}$$

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

$$f(x) + 1 = \{(1, 1)(2, 2)(3, 3)(4, 4)\}$$

(ب)

$$2f(x) = \{(1, 2)(2, 4)(3, 6)(4, 8)\}$$

(الف)

$$f(x) = \{(1, 1)(2, 2)(3, 3)(4, 4)\}$$

$$2f(x) = \{(1, 2)(2, 4)(3, 6)(4, 8)\}$$

(ج)

$$2f(x) + 1 = \{(1, 3)(2, 5)(3, 7)(4, 9)\}$$

$$\frac{2f}{g} =$$

$$2f = \{(1, 2)(2, 4)(3, 6)(4, 8)\}$$

$$\frac{2f}{g} = \{(1, 1)(2, 2)(3, 3)(4, 4)\}$$

(ب)

$$f - g =$$

$$\{(1, 1)(2, 2)(3, 3)(4, 4)\}$$

(الف)

10