

14, 5

$$y = \sqrt{x f(x)} \Rightarrow [-5, 0] \rightarrow x \leq 0 \text{ و } f(x) \leq 0$$

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

$f(x)$ (شماره ها) = -5, 2, 5

$$[2, 5] \rightarrow x \geq 0 \text{ و } f(x) \geq 0$$

$$\Rightarrow x f(x) \geq 0 \Rightarrow [-5, 0] \cup [2, 5]$$

✓

$$y = \sqrt{\frac{-x}{f(x)}} \Rightarrow -3, 0 \text{ و } 2, 5$$

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

$$f(x) \neq 0$$

اعداد صحیح $k = -2, -1, 0, 1, 2$

1, 5

$$f(x) - 2f(2) = x^2 - 3x + 4$$

$$f(-2) - 2f(2)$$

$$= (-2)^2 - 3(-2) + 4$$

$$\rightarrow f(-2) - 2(-2) = 4 + 4 + 4 = 12$$

$$f(-2) + 4 = 12$$

$$f(-2) = 8$$

✓

$$f(f(5)) + f(f(1))$$

$$f(1) = 2(1) + 2 = 4$$

$$f(4) = 2$$

$$\Rightarrow 4 + 2 = 6$$

✓

$$f(x) = ax^2 - bx + 2 \rightarrow f'(x-1) - f(x) = 9x + 1$$

$$a - b = ?$$

$$f(x-1) = a(x-1)^2 - b(x-1) + 2$$

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

$$= -2ax + a + b = 9x + 1$$

$$\Rightarrow a - b = -1$$

✓

$$-2ax = 9x \Rightarrow a = -\frac{9}{2}$$

$$a + b = 2 \Rightarrow -\frac{9}{2} + b = 2 \Rightarrow b = \frac{13}{2}$$

$$-3 - a = -1 \Rightarrow a = -2$$

$$f(x) = x^r - r_{n+1}$$

$$\frac{f(r) + f(-1)}{f(r)} = \frac{r + \Delta}{1} = \underline{r} \quad \text{Ⓟ} \checkmark$$

$$\frac{f(r) - f(-r)}{f(r)}$$

$$\begin{matrix} r_{n+1} & n \geq r \\ x^r & n < r \end{matrix}$$

$$\frac{r_9 - 1}{r} = \underline{r} \quad \text{Ⓟ} \checkmark$$

$$\frac{f(f(r)) - f(f(-r))}{f(r)} = \frac{r - r}{r} = \underline{0} \quad \text{Ⓟ} \checkmark$$

$$x^r + rx + \Delta = (x+r)^r + 1 = (\sqrt{r})^r + 1 = r + 1 = \Delta$$

$$x^r + rx + r = (x+r)^r + \Delta \Rightarrow r + \Delta = 1$$

$$f(\sqrt{r} - r) = \frac{1}{r} = r$$

$$\begin{matrix} x = \sqrt{r} - r \\ x + r = \sqrt{r} \end{matrix}$$

$$f(r) = \frac{r^r + f(r) + r}{r^r + f(r) + \Delta} \Rightarrow \frac{r + 1 + r}{r + 1 + \Delta} = \underline{\frac{r+1}{r}} \quad \text{Ⓟ} \checkmark$$

$$f(\sqrt{x}) - f(x)$$

$$f(\sqrt{x}) = (\sqrt{x})^r + \frac{1}{(\sqrt{x})^r} \rightarrow x + \frac{1}{x}$$

$$(x + \frac{1}{x})^r = x^r + \frac{1}{x^r} + r \Rightarrow x^r + r + \frac{1}{x^r} - (x^r + \frac{1}{x^r}) = \underline{r} \quad \text{Ⓟ} \checkmark$$