

بازرسی

$$u f(u) \geq 0 \quad \begin{cases} u, f(u) \geq 0 \rightarrow [2, 5] \\ u, f(u) \leq 0 \rightarrow [-5, 0] \end{cases}$$

$$[2, 5] \cup [-5, 0] = D_f \quad \textcircled{2} \checkmark$$

$$\frac{-u}{f(u)} \geq 0 \quad \begin{cases} +u \geq 0 & f(u) < 0 \rightarrow (0, 2) \\ u < 0 & f(u) > 0 \rightarrow (-2, 0) \end{cases}, f(u) \neq 0$$

$$D_f = (0, 2) \cup (-2, 0) \quad \textcircled{2} \checkmark$$

$$f(r) - rf(r) = 1 - 4 + r \quad f(-r) + r = 1 + 4 + r$$

$$-f(r) = +r$$

$$f(u) = -r \quad \textcircled{2} \checkmark$$

$$\boxed{f(-r) = 1}$$

$$f(u) = 8 - \sqrt{u+8} = 2 \quad f(0) = 8$$

$$f(f(u)) = f(2) = 8 - \sqrt{2+8} = 4$$

$$f(f(u)) = f(0) = 8 - \sqrt{0+8} = 4$$

$$\textcircled{2} \checkmark$$

$$f(f(u)) + f(f(u)) = \boxed{4+4=8}$$

$$a(u-r) - bu + b + r - au^r + bu - r = 4u + r$$

$$a(u-r) + b - au^r = 4u + r = au^r + a + r + a + b - au^r = 4u + r$$

$$a - r + a + b = 4u + r$$

$$-ra = 4 \Rightarrow a = -r \quad \boxed{a - b = -r - 8 = -1}$$

$$a + b = r = -r + b \Rightarrow b = 8$$

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✓ تکلیف

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$$f(r) = 9 - 9 + 1 = 1$$

$$f(-1) = 1 + 1 + 1 = 3$$

$$f(1) = 1 - 4 + 1 = -2 \quad (2) \checkmark$$

$$\frac{r f(r) + f(-r)}{f(r)} = \frac{r \times 1 + 3}{1} = 4 \quad \boxed{4}$$

$$f(x) = 3 \times 4 + 1 = 13$$

$$f(-1) = (-1)^2 = 1$$

$$f(1) = 1 + 1 = 2 \quad (2) \checkmark$$

$$\frac{r f(x) - r f(-r)}{f(r)} = \frac{r \times 13 - 1}{2} = \frac{13r - 1}{2} \quad \boxed{\frac{13r - 1}{2}}$$

$$f(x) = 1$$

$$f(1) = 1$$

$$f(f(x)) = f(1) = 1$$

$$f(r) = 1$$

$$f(1) = 1 \quad (2) \checkmark$$

$$\frac{f(f(x)) - f(f(r))}{f(x) - r} = \frac{1 - 1}{1 - 1} = 0 \quad \boxed{0}$$

$$f(n) = \frac{(n+r)^r + 8}{(n+r)^r + 1}$$

$$f(r) = \frac{r^r + 8}{r^r + 1} = \frac{21}{14}$$

$$f(\sqrt{r}-r) = \frac{\sqrt{r}^r + 8}{\sqrt{r}^r + 1} = \frac{1}{1} = 1 \quad (2) \checkmark$$

$$f(\sqrt{n}) = n + \frac{1}{n}$$

$$(f(\sqrt{n}))^r = \left(n + \frac{1}{n}\right)^r$$

$$f(n) = \left(n + \frac{1}{n}\right)^r - r \quad (2) \checkmark$$

$$(f(\sqrt{n}))^r - f(n) = \left(n + \frac{1}{n}\right)^r - \left(n + \frac{1}{n}\right)^r + r = r \quad \boxed{r}$$