

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس

برای آنکه نسبت به اعداد صحیح مثبت و برای هر x و $f(x)$ هم علامت باشند، پس:

$$y = \sqrt{x f(x)} \quad \begin{array}{ccccccc} -4 & -3 & 0 & 2 & 5 \\ \hline - & + & - & + & + \end{array}$$

$$x f(x) \geq 0 \quad D_f = [-3, 0] \cup [2, 5]$$

$$D = [-4, 0] \cup [2, 5]$$

$$\frac{x}{f(x)} \geq 0 \rightarrow \frac{x}{f(x)} \leq 0$$

$$y = \sqrt{\frac{-x}{f(x)}} \quad \begin{array}{ccccccc} -4 & -3 & 0 & 2 & 5 \\ \hline - & + & - & - & + \end{array}$$

حالت اول: $f(x) < 0, x > 0$
حالت دوم: $f(x) > 0, x < 0$

$$\frac{-x}{f(x)} \geq 0 \quad D_g = (-3, 2) - \{0\}$$

$$f(x) - 2f(2) = x^2 - 5x + 4$$

$$f(2) - 2f(2) = 2 \rightarrow f(2) = -2 \rightarrow f(x) = x^2 - 3x$$

$$x = -2 \quad f(-2) = 1$$

$$f(-2) = (-2)^2 - 3(-2) = 4 + 6 = 10$$

$$f(x) = \begin{cases} x - \sqrt{x+1} & x > 3 \\ 2x + 3 & x \leq 3 \end{cases}$$

$$f(4) = 4 - \sqrt{4+1} = 2$$

$$f(f(4)) = f(2) = 2$$

$$f(1) = 2(1) + 3 = 5$$

$$f(f(1)) = f(5) = 2$$

$$2 + 3 = 5$$

$$f(x) = ax^2 + bx + 2$$

$$f(n-1) - f(n) = 4n + 1$$

$$f(n-1) - f(n) = -2an + a + b$$

$$-2a = 4 \Rightarrow a = -2$$

$$a + b = 1 \Rightarrow b = 3$$

$$a = b = -2 - 5 = -7$$

$$f(n) = n^9 - n + 1$$

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

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

$$f'(n) = 9n^8 - 1$$

$$f'(1) = 8$$

$$\frac{nf'(n) + f(-1)}{f'(1)} = \frac{9(1) + 3}{1} = 12$$

$$f(n) = \begin{cases} n+1 & n \geq 1 \\ n^2 & n < 1 \end{cases}$$

$$f(1) = 2$$

$$f(-1) = 1$$

$$f(1) = 2$$

$$\frac{nf'(1) - f(-1)}{f'(1)} = \frac{1(2) - 1}{1} = 1$$

$$f = \{(1, 4), (4, 1), (1, 1)\}$$

$$f(1) = 1 \Rightarrow f(f(1)) = f(1) = 1$$

$$f(4) = 1 \Rightarrow f(f(4)) = f(1) = 1$$

$$4 - 1 = 3$$

$$f(1) - 1 = 1 - 1 = 0$$

$$f(n) = \frac{n^2 + 14n + 9}{n^2 + 14n + 2}$$

$$n = \sqrt{14} - 1$$

$$n + 1 = \sqrt{14}$$

$$n^2 + 14n = (n+1)^2 - 1 = 14 - 1 = 13$$

$$f(\sqrt{14} - 1) = \frac{-1 + 9}{-1 + 2} = 8$$

$$f(f(\sqrt{14} - 1)) = f(8)$$

$$\frac{8^2 + 14(8) + 9}{8^2 + 14(8) + 2} = \frac{111}{114}$$

$$f(n) = n^2 + \frac{1}{n^2}$$

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

$$[f(\sqrt{n})]^2 = \left(n + \frac{1}{n}\right)^2 = n^2 + 2 + \frac{1}{n^2}$$

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