

نام و نام خانوادگی ۱۹, ۵ پاسخنامه تشریحی تکلیف شماره ۷ کلاس ۱۹, ۵

$$xf(x) \geq 0 \Rightarrow \begin{array}{c} \text{---} \end{array} \Rightarrow D_f = [-5, 0] \cup [2, 5]$$

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$$\frac{-x}{f(x)} \geq 0, f(x) \neq 0 \Rightarrow \begin{array}{c} \text{---} \end{array} \Rightarrow D_f = (-2, 0) \cup (0, 2) \cup (2, +\infty)$$

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$$f(2) - 2f(2) = 4 - 6 + 2 = 0 \Rightarrow f(-2) - 2f(2) = 4 + 6 + 2 = 12 \Rightarrow f(-2) = 10$$

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$$f(5-2) + f(5) = f(2) + (5^2) = 7 + 5 - 2 = 9$$

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

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

$$\Rightarrow f(x-1) - f(x) = -2ax + a + b = 5x + 2$$

$$\Rightarrow -2a = 5 \Rightarrow a = -\frac{5}{2} \Rightarrow b = 2, \Rightarrow a - b = -\frac{7}{2}$$

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$$\frac{f(1) + 2}{(-1)^2} = \textcircled{V}$$

$$f(x) = x^2 - 3x + 1 \rightarrow \begin{cases} f(1) = 1^2 - 3(1) + 1 = -1 \\ f(-1) = (-1)^2 - 3(-1) + 1 = 5 \\ f(2) = 2^2 - 3(2) + 1 = -1 \end{cases}$$

$$\frac{f(9) - 1}{\sqrt{}} = \textcircled{\frac{71}{\sqrt{}}}$$

$$f(x) = \begin{cases} 3x+1 & x \geq 2 \\ x^2 & x < 2 \end{cases} \rightarrow \begin{cases} f(4) = 3(4)+1 = 13 \\ f(-2) = (-2)^2 = 4 \\ f(2) = 3(2)+1 = 7 \end{cases}$$

$$\frac{f(1) - f(2)}{f(1) - f(2)} = \frac{1-4}{1-4} = \textcircled{0}$$

$$\begin{aligned} 1 &\xrightarrow{f} 4 \xrightarrow{f} 16 \rightarrow f(f(1)) = 16 \\ 2 &\xrightarrow{f} 4 \xrightarrow{f} 16 \rightarrow f(f(2)) = 16 \\ 4 &\xrightarrow{f} 16 \rightarrow f(4) = 16 \end{aligned}$$

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

$$\Rightarrow f(x) = \frac{x^2 + 1 + 2}{x^2 + 1 + 2} = \textcircled{\frac{3}{3}}$$

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