

$$xf(x) \geq 0 \Rightarrow \begin{cases} x=0 \rightarrow \{0\} \\ f(x)=0 \rightarrow -5, 2, 5 \end{cases} \Rightarrow \begin{array}{c} -5 \quad 0 \quad 2 \quad 5 \\ - \quad + \quad - \quad + \quad - \end{array} \Rightarrow [-5, 0] \cup [2, 5] \quad 1$$

(۲) ✓

$$\frac{-x}{f(x)} \geq 0 \Rightarrow \begin{cases} -x \rightarrow 0 \Rightarrow \{0\} \\ f(x) \rightarrow 0 \Rightarrow -3, 0, 2, 5 \end{cases} \Rightarrow \begin{array}{c} -3 \quad 0 \quad 2 \quad 5 \\ - \quad + \quad - \quad + \quad - \end{array} \Rightarrow (-3, 0) \cup (0, 2) \cup (2, 5) \quad 2$$

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

$$\Rightarrow x=-2 \Rightarrow f(-2) - \frac{1}{f(2)} = \frac{1}{4} \Rightarrow f(-2) - \frac{1}{-2} = \frac{1}{4} \Rightarrow f(-2) = \frac{1}{4} - \frac{1}{2} = -\frac{1}{4} \Rightarrow f(-2) = 1$$

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$$f(5) \Rightarrow 5 > 3 \Rightarrow 5 - \sqrt{5+3} \Rightarrow 2 \xrightarrow{r=2} f(2) = 4 + 3 = 7 \Rightarrow f(f(5)) = 7$$

$$f(1) \Rightarrow 1 < 3 \Rightarrow 1 \xrightarrow{r=1} 1 - \sqrt{1+3} \Rightarrow -2 \xrightarrow{r=-2} f(-2) = 4 - 3 = 1 \Rightarrow f(f(1)) = 1$$

$$\boxed{v+2=9}$$

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$$\Rightarrow ax^2 + a - 2ax - b + 2 = -ax^2 + 6ax - 7 = 6a + 2 \Rightarrow a + b - 2a = 6a + 2 \Rightarrow -a = 6a + 2 \Rightarrow -7a = 2 \Rightarrow a = -\frac{2}{7}$$

$$\Rightarrow -2a = 6 \Rightarrow a = -3 \rightarrow a + b = 2 \Rightarrow -3 + b = 2 \Rightarrow b = 5$$

$$a - b \Rightarrow -3 - 5 = -8$$

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$$\begin{aligned} f(x) &= 9 - 9 + 1 = 1 \\ f(-1) &= 1 + 3 + 1 = 5 \\ f(x) &= 9 - 9 + 1 = 1 \end{aligned}$$

$$\left. \begin{aligned} f(x) &= 9 - 9 + 1 = 1 \\ f(-1) &= 1 + 3 + 1 = 5 \\ f(x) &= 9 - 9 + 1 = 1 \end{aligned} \right\} \Rightarrow \frac{f(f(x)) - f(f(-1))}{f(x) - f(-1)} = \frac{1 - 5}{1 - 5} = \frac{4}{4} = 1$$

(C) ✓

$$\begin{aligned} f(x) &= 11x + 1 = 13 \\ f(-x) &= 13 \\ f(x) &= 9 + 1 = 10 \end{aligned}$$

$$\left. \begin{aligned} f(x) &= 11x + 1 = 13 \\ f(-x) &= 13 \\ f(x) &= 9 + 1 = 10 \end{aligned} \right\} \Rightarrow \frac{f(f(x)) - f(f(-x))}{f(x) - f(-x)} = \frac{13 - 13}{10 - 13} = \frac{0}{-3} = 0$$

(C) ✓

$$\begin{aligned} f(f(x)) &\Rightarrow f(x) = 1 \Rightarrow f(f(x)) = f(1) = 9 \\ f(f(x)) &\Rightarrow f(x) = 1 \Rightarrow f(f(x)) = f(1) = 9 \\ f(1) &= 9 \end{aligned}$$

$$\left. \begin{aligned} f(f(x)) &\Rightarrow f(x) = 1 \Rightarrow f(f(x)) = f(1) = 9 \\ f(f(x)) &\Rightarrow f(x) = 1 \Rightarrow f(f(x)) = f(1) = 9 \\ f(1) &= 9 \end{aligned} \right\} \Rightarrow \frac{f(f(f(x))) - f(f(f(1)))}{f(1) - f(1)} = \frac{9 - 9}{9 - 9} = \frac{0}{0} = 0$$

(C) ✓

$$f(\sqrt{x}) = \frac{1 + f(\sqrt{x}) + \sqrt{x} - 1 + 9}{1 + f(\sqrt{x}) + \sqrt{x} - 1 + 9} = \frac{1}{1} = 1$$

$$f(x) = \frac{1 + 1 + 9}{1 + 1 + 9} = \frac{11}{11} = 1$$

(C) ✓

$$\begin{aligned} f(\sqrt{x}) &= 21 + \frac{1}{x} \Rightarrow (f(\sqrt{x}))^2 = (21 + \frac{1}{x})^2 = 441 + \frac{42}{x} + \frac{1}{x^2} \\ f(x) &= 21 + \frac{1}{x} \end{aligned}$$

$$\Rightarrow \frac{(f(\sqrt{x}))^2 - f(x)}{f(x) - f(x)} = \frac{441 + \frac{42}{x} + \frac{1}{x^2} - (21 + \frac{1}{x})}{0} = \frac{420 + \frac{41}{x} + \frac{1}{x^2}}{0}$$

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