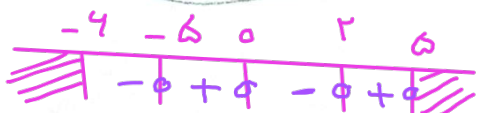


نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره: کلاس: ۱۴، ۱۵

$g = \sqrt{x f(x)}$
 $0, 2 \leq x f(x)$
 $D_f = [-5, 0] \cup [2, 5]$

۱، ۵

$-x \geq 0 \Rightarrow x \leq 0$
 $f(x) > 0$
 $g = \sqrt{\frac{-x}{f(x)}}$
 $(-5, 0) \cup (0, 2)$
 حالت اول: $f(x) < 0, x > 0$
 حالت دوم: $f(x) > 0, x < 0$

۱، ۵

$f(-2) = 1$
 $x=2 \rightarrow f(2) - 2f(2) = f - 4 + 9$
 $f(2) = 5$
 $f(-2) - 2f(-2) = f + 4 + 4$
 $f(-2) = 10$
 $f(x) - 2f(2) = x^2 - 4x + 9$
 $f(-2) - 2f(2) = 10 - 10 = 0$
۲

$\omega = \sqrt{\frac{1}{5+4x}} = 2$
 $f(x) = \begin{cases} x - \sqrt{x+4} & x > 12 \\ 2x + 12 & x \leq 12 \end{cases}$
 $\frac{f(f(0))}{x} + \frac{f(f(1))}{y} = 1$
 $\frac{f(0)}{x} + \frac{f(1)}{y} = 1$
 $\frac{0}{x} + \frac{1}{y} = 1 \Rightarrow y = 1$
 $\omega = \sqrt{\frac{1}{5+4x}} = 2$
 $5+4x = \frac{1}{4} \Rightarrow x = -\frac{11}{4}$
۲

$a-b=8, x \in \mathbb{R} \Rightarrow f(x-1)f(x) = 4x+2$
 $f(x) = ax^2 - bx + 2$
 $f(x-1) = a(x-1)^2 - b(x-1) + 2 = ax^2 - 2ax - bx + a + b + 2$
 $f(x-1)f(x) = (ax^2 - 2ax - bx + a + b + 2)(ax^2 - bx + 2) = 4x + 2$
 $-2a = 4 \Rightarrow a = -2$
 $a + b = 8 \Rightarrow b = 10$
۵

Scanned with CamScanner

$$\frac{y(f(y) + f(-1))}{f'(y)} = \textcircled{V}$$

$\textcircled{V} \checkmark$

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

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

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

$$f'(1) = (f(1))' = 1' = 1$$

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

$$\frac{x+1}{1} = V$$

$$\frac{y(f(y) - f(-1))}{f'(y)}$$

$$f(-1) \rightarrow 1 \quad x < 1 \rightarrow x^2$$

$$f(1) \rightarrow x+1 \quad x \geq 1$$

$$x^2 + 1 = 1$$

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

$$\frac{x^2 + 1 - 1}{1} = \frac{x^2}{1} = x^2$$

1, V, \Delta

$$\frac{f(f(x)) - f(f(-1))}{f'(x)} = 0$$

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

$\textcircled{V} \checkmark$

$$x+1 - 1$$

$$f(f(\sqrt{x}-1))$$

$$\text{hence } f(x) = \frac{x^2 + 1}{x^2 + 1 + 1}$$

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

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

$\textcircled{V} \checkmark$

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

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

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

$$x + \frac{1}{x} + 1 - x - \frac{1}{x} = 1$$

$\textcircled{V} \checkmark$