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$y = \sqrt{x f(x)}$ ؟

$x f(x) \geq 0$

$x = -4 \Rightarrow -4 f(-4) < 0 \quad x$

$x = -\omega \Rightarrow -\omega f(-\omega) \geq 0$

$x = 2 \Rightarrow 2 f(2) \geq 0$

$x = \omega \Rightarrow \omega f(\omega) \geq 0$

$[-\omega, 0] \cup [2, \omega]$

$D_y = [-\omega, 0] \cup [2, \omega]$

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$\frac{-x}{f(x)} \geq 0, f(x) \neq 0$

$x = -2 \Rightarrow \frac{4}{f(2)} = \frac{4}{0} \quad \Rightarrow (-2, 0) \cup (0, 2)$

$x = 2 \Rightarrow \frac{-2}{f(2)} = -\frac{2}{0} \quad \Rightarrow (2, 0) \cup (0, 2)$

حالت اول: $f(x) < 0, x > 0$!

حالت دوم: $f(x) > 0, x < 0$

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$f(x) - 2f(2) = x^2 - 3x + 4$

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

$-f(2) = 4 \Rightarrow f(2) = -4$

$f(-2) + 4 = 4 + 4 + 4$

$f(-2) = 10$

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$f(x) = \begin{cases} x - \sqrt{x+4} & x \geq 3 \\ 2x + 2 & x < 3 \end{cases}$

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

$f(2) = 4 + 2 = 6$

$f(1) = 2 + 2 = 4$

$f(f(\omega)) + f(f(1)) = 9$

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$F(x) = ax^2 - bx + 2$

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

$F(x-1) - F(x) = 4x + 2$

$a(x^2 - 2x + 1) - b(x-1) + 2 - (ax^2 - bx + 2) = -2ax + a + b = 4x + 2$

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

$a - b = -2 \Rightarrow -2 - b = -2 \Rightarrow b = 0$

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$$f(x) = x^2 - 4x + 1$$

$$\frac{f(3) - f(-1)}{f'(x)} = \frac{0}{1} = 0$$

Ⓟ ✓

$$f(3) = 9 - 12 + 1 = -2$$

$$f(-1) = 1 + 4 + 1 = 6$$

$$f'(x) = 2x - 4$$

$$\begin{cases} x > 1 \\ x < 1 \end{cases}$$

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

$$f(-x) = -x$$

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

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

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$$\frac{f(f(x)) - f(f(-x))}{f'(x)} = \frac{9 - 4}{2} = \frac{5}{2}$$

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$$f(x) = \frac{x^2 + 4x + 4}{x^2 + 4x + 4} = \frac{(x+2)^2}{(x+2)^2} = \frac{1}{1} = 1$$

$$f(x) = \frac{4 + 4 + 4}{4 + 4 + 4} = \frac{12}{12} = 1$$

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

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

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