

$$x f(x) > 0 \Rightarrow \begin{array}{c|ccc} & -\infty & 0 & \infty \\ \hline & - & + & - \end{array} \Rightarrow [-\infty, 0] \cup [2, \infty]$$

$-x \geq 0 \Rightarrow x \leq 0$
 $f(x) > 0$
 $d = \sqrt{\frac{-x}{f(x)}}$

$$\begin{array}{c|ccc} & -\infty & 0 & \infty \\ \hline & - & + & - \end{array} \Rightarrow (-\infty, 0) \cup (0, 2)$$

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

$$f(-1) \Rightarrow f(-1) - 12 = 1 + 4 - 10 = -7$$

$$f(f(x)) = f(f(x)) \Rightarrow f(x) = x - \sqrt{x^2 + 4} = 2$$

$$f(1) = 1 + 3 = 4 \Rightarrow f(4) = 2 \Rightarrow 1 + 2 = 3$$

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

$$ax^2 + 2ax + a + bx + b + c = 4x^2 + 12x + 10$$

$$\begin{cases} a = 4 \\ 2a + b = 12 \\ a + b + c = 10 \end{cases} \Rightarrow \begin{cases} a = 4 \\ b = 4 \\ c = 2 \end{cases}$$

$$\frac{xf(x) - f(-1)}{f'(x)} \Rightarrow f(x) = 9 - 9 + 1 = 1$$

$$f'(x) \quad f(-1) = 1 + 9 + 1 = 11 \Rightarrow \frac{x+11}{x+1} \quad \left. \begin{array}{l} f(x) = 5 - 9 + 1 = -1 \end{array} \right\}$$

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

$$f(-x) = -x \Rightarrow \frac{x9 - 11}{x} = \frac{x1}{x}$$

$$f(x) = 4 + 1 = 5$$

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

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

$$\frac{x^2 + tx + 9}{x^2 + tx + 1} \Rightarrow \frac{x^2 + tx + 1 + 8}{x^2 + tx + 1} = \frac{(x+1)^2 + 8}{(x+1)^2 + 1}$$

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

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

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