

$$\sqrt{x} f(x) = \dots \Rightarrow x f(x) \geq 0 \Rightarrow f(x) \geq 0 \Rightarrow [-\frac{1}{2}, 0] \cup [2, \infty)$$

$$f(x) < 0 \Rightarrow (-\frac{1}{2}, 2)$$

$$x < 0 \Rightarrow f(x) > 0 \Rightarrow (-\frac{1}{2}, 0) \Rightarrow \dots \Rightarrow [-\frac{1}{2}, 0] \cup [2, \infty)$$

$$f(x) < 0 \Rightarrow f(x) > 0 \Rightarrow \dots \Rightarrow [-\frac{1}{2}, 0] \cup [2, \infty)$$

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$$\frac{-2x}{f(x)}$$

$$= 0 \Rightarrow x = -\frac{1}{2}, 0, 2$$

$$\frac{-2x}{f(x)} \geq 0 \Rightarrow D = (-\frac{1}{2}, 0) \cup (0, 2) \Rightarrow -\frac{1}{2}, -1, 1 \Rightarrow \dots$$

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$$f(x) - 2f(2) = x^2 - 3x + 4 \Rightarrow -f(2) = \frac{f(-2) + f(4)}{2} = -2$$

$$f(x) + 4 = \frac{f(-2) + f(4)}{2} \Rightarrow f(-2) = 10$$

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$$f(f(5)) + f(f(1)) \Rightarrow 7 + 2 = 9$$

$$f(x) = \begin{cases} x - \sqrt{40x} & x < 2 \\ 2x + 3 & x \geq 2 \end{cases}$$

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

$$-2a \cdot 2 + a + b = 4 + 2 \Rightarrow -2a = 4 \Rightarrow a = -2 \Rightarrow a + b = 2 \Rightarrow b = 4$$

$$a - b = -2 - 4 = -6$$

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$$f(x) = x^2 - 5x + 1$$

$$\frac{f(2) + f(-1)}{f'(2)} \Rightarrow \frac{(-9+1) + 1+5+1}{(5-9+1)'} \Rightarrow \sqrt{\quad}$$

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$$\frac{f(x) - 2f(-2)}{f'(2)} = \frac{29x-1}{x-5} \Rightarrow \frac{21}{x} \quad f(2) \begin{cases} 2x+1 & x > 2 \\ x^2 & x < 2 \end{cases}$$

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

$$f = \{(2, 4), (3, 2), (4, 1), (1, 4)\}$$

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$$\frac{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 9}{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 0} = \frac{3-4\sqrt{3}+4+4\sqrt{3}-8+9}{3-4\sqrt{3}+4+4\sqrt{3}-8+9} = \frac{8}{8} = 1$$

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

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

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