

$$x f(x) \geq 0$$

$$\begin{array}{c} -\infty & -5 & 0 & 2 & 5 \\ + & - & + & - & + \end{array} \rightarrow D = [-5, 0] \cup [2, 5]$$

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$$\begin{array}{c} -3 & 0 & 2 & 5 \\ + & - & + & - \end{array} \rightarrow D = (-\infty, -3) \cup (0, 2)$$

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$$\begin{array}{c} -4 & -3 & 0 & 2 & 5 \\ + & - & + & - & + \end{array} \quad D_g = (-3, 2) - \{0\}$$

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

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

$$x=-2 \quad -f(2) \quad 2 \\ f(-2) + 4 = 4 - 6 + 4 \Rightarrow f(-2) = 10$$

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$$1 \leq 3 \Rightarrow 2 \times 1 + 3 = 5 \Rightarrow f(1) = 5$$

$$5 > 3 \Rightarrow 5 - \sqrt{5+3} = 2 \Rightarrow f(f(1)) = 2$$

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

$$2 \leq 3 \Rightarrow 2 \times 2 + 3 = 7 \Rightarrow f(f(5)) = 7$$

$$2 + 7 = 9$$

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

$$x=1 \Rightarrow f(1) = a - b + 2 \Rightarrow f(1) - 2 = a - b \Rightarrow \frac{-a}{-2-2} = a - b$$

$$\frac{f(1-1) - f(1)}{f(0) - 2} = 4 + 2 \Rightarrow -f(1) = 6 \Rightarrow f(1) = -6$$

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$f(3) = 9 - 3 \times 3 + 1 = 1 \Rightarrow f(3) = 1$ $f(-1) = 1 - 3 \times -1 + 1 = 5$ $f(2) = 4 - 3 \times 2 + 1 = -1$ $f^2(2) = (f(2))^2 \Rightarrow (-1)^2 = 1$	$\frac{3 + 5}{1} = 8$ (3) ✓	6
$5 \geq 2 \Rightarrow 3 \times 5 + 1 = 16 \Rightarrow 3f(5) = 16$ $-2 < 2 \Rightarrow (-2)^2 = 4 \Rightarrow -2f(-2) = -8$ $2 \geq 2 \Rightarrow 3 \times 2 + 1 = 7$	$\frac{\frac{16}{3} - 8}{7} = \frac{16}{21}$ (2) ✓	7
$f(4) = 1 \quad f(1) = 9 \Rightarrow f(f(4)) = 9$ $f(3) = 1 \quad f(2) = 9 \Rightarrow f(f(3)) = 9$ $f(1) = 9$	$\frac{9 - 9}{9} = 0$ (2) ✓	8
$f(\sqrt{3}-2) = \frac{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 9}{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 5} = \frac{1}{4} = 2$ $f(f(\sqrt{3}-2)) = \frac{4 + 1 + 9}{4 + 1 + 5} = \frac{14}{10} = 7$	(2) ✓	9
$f(\sqrt{x}) = \sqrt{x} + \frac{1}{\sqrt{x}} \Rightarrow (f(\sqrt{x}))^2 = (x + \frac{1}{x})^2 = x^2 + \frac{1}{x^2} + \frac{2}{x}$ $(f(\sqrt{x}))^2 - f(x) = x^2 + \frac{1}{x^2} + \frac{2}{x} - x^2 - \frac{1}{x^2} = 2$	(2) ✓	10