

$$\sqrt{x f(x)} \geq 0$$

$$\begin{array}{cccc} -5 & 0 & 2 & 5 \\ +\phi & +\phi & -\phi & +\phi \\ \hline & & & - \end{array}$$

$$D_f = [-5, 0] \cup [2, 5]$$

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

$$f(x) \neq 0 \quad -2 \leq x \leq 5$$

$$\begin{array}{cccc} -2 & 0^* & 2 & 5 \\ -\frac{1}{2} & +\frac{1}{2} & +\frac{1}{2} & -\frac{1}{2} \\ \hline & & & 0 \end{array}$$

$$D_f = (-2, 0) \cup (0, 2)$$

2

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

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

$$f(-2) = 18$$

3

$$f(-3) + f(5) = -3 - 3 = -6$$

$$f(5) = -3$$

$$f(1) = 5$$

$$f(-3) = -3$$

4

$$f(n-1) = a(n-1)^2 - b(n-1) + 2$$

$$f(n-1) - f(n) = a(n-1)^2 - b(n-1) + 2 - a n^2 + b n - 2 = 9n + 2$$

$$a - 2a n + b = 9n + 2$$

$$\Rightarrow a = -3$$

$$a - b = -3 - 0 = -3$$

$$-3 + 9n + b = 9n + 2 \Rightarrow b = 5$$

5

$$f(\sqrt{x}-1) = \frac{(\sqrt{x}-1)^2 + 2(\sqrt{x}-1) + 5}{(\sqrt{x}-1)^2 + 2(\sqrt{x}-1) + 7} = \frac{x - 2\sqrt{x} + 1 + 2\sqrt{x} - 2 + 5}{x - 2\sqrt{x} + 1 + 2\sqrt{x} - 2 + 7} =$$

$$\frac{3}{7} = \frac{1}{x}$$

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

$$f(a) = a^2 + 2$$

$$f(-3) = 9 + 2 = 11$$

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$$9 - x^2 \geq 0 \Rightarrow |x| \leq 3$$

$$\text{الف) } \frac{f}{g} = \left\{ (2, 0), \left(1, \frac{2}{\sqrt{11}}\right), \left(0, \frac{2}{\sqrt{11}}\right) \right\}$$

$$\text{ب) } \frac{g}{f} = \left\{ \left(1, \frac{\sqrt{11}}{2}\right), \left(0, \frac{\sqrt{11}}{2}\right) \right\}$$

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$$\text{الف) } 2f(x) = \left\{ (2, 2), (3, 1), (-5, 4), (1, -4) \right\}$$

$$\text{ب) } f(x) + 1 = \left\{ (2, 2), (3, 5), (-5, 3), (1, -1) \right\}$$

$$\text{ج) } 2f^2(x) + 1 = \left\{ (2, 4), (3, 49), (-5, 13), (1, 13) \right\}$$

$$\text{د) } f(2x) = \left\{ (1, 1), (1/5, 4), (-2/5, 2), (0/5, -2) \right\}$$

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$$\text{الف) } f - g = \left\{ (1, 4), (2, 2), (3, 2) \right\}$$

$$\text{ب) } \frac{2f}{g} = \left\{ (2, 4), (3, -1) \right\}$$

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