

$$mf(n) > 0$$

$$\Rightarrow f(n) = -5, 2, 5$$

ریشه های

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

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

۱

$$-\frac{m}{f(n)} > 0$$

$$\Rightarrow f(n) = -3, 0, 2, 5$$

ریشه های

$$\Rightarrow D_f = (-3, 0) \cup (0, 2)$$

$$\Rightarrow \text{اعداد صحیح} = -2, -1 \Rightarrow \boxed{\text{عدد صحیح} = 3}$$

$$\begin{array}{cccc} -3 & 0 & 2 & 5 \\ -\cancel{+} & + & -\cancel{+} & + \end{array}$$

۲

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

$$\Rightarrow f(-2) + 2f(2) = 14$$

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

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

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

$$\Rightarrow f(-2) = 10$$

۳

$$f(5) = 5 - \sqrt{9} = 2$$

$$f(2) = 4 + 3 = 7$$

$$\Rightarrow 7 + 2 = 9$$

$$f(1) = 2 + 3 = 5$$

$$f(5) = 5 - \sqrt{9} = 2$$

۴

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

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

$$= an^2 - 2an + a - bn + b + 2$$

$$f(n-1) - f(n) \Rightarrow (an^2 - 2an + a - bn + b + 2) - (an^2 - bn + 2)$$

$$= -2an + a + b$$

$$-2an + a + b = 4n + 2 \Rightarrow -2a = 4 \Rightarrow a = -2$$

$$a + b = 2$$

$$-2 + b = 2$$

$$\Rightarrow b = 4$$

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

۵

$f(x) = x^2 - 9 + 1 = 1$ $f(-1) = (-1)^2 - 9 + 1 = 0$ $f(2) = 2^2 - 9 + 1 = -1$	$\frac{(2 \times 1) + (0)}{1} = 1$	6
$f(4) = 13$ $f(-2) = 5$ $f(2) = 1$	$\frac{(2 \times 13) - (2 \times 5)}{1} = \frac{16}{1} = 16$	7
$f(5) = 1 \rightarrow f(1) = 4$ $f(2) = 2 \rightarrow f(2) = 4$ $f(1) = 4$	$\Rightarrow \frac{4-4}{4-2} = 0$	8
$f(x) = \frac{(x+2)^2 + 1}{(x+2)^2 + 1}$ $\Rightarrow f(\sqrt{x}-2) = \frac{(\sqrt{x}-2+2)^2 + 1}{(\sqrt{x}-2+2)^2 + 1} = \frac{1}{1} = 1$ $\Rightarrow f(2) = \frac{2^2 + 1}{2^2 + 1} = \frac{5}{5} = 1$		9
$f(\sqrt{x}) = (\sqrt{x})^2 + \frac{1}{(\sqrt{x})^2} = x + \frac{1}{x}$ $\rightarrow (x + \frac{1}{x})^2 = x^2 + \frac{1}{x^2} + 2$ $\rightarrow x^2 + \frac{1}{x^2} + 2 - x^2 - \frac{1}{x^2} = 2$	$f(x) = x^2 + \frac{1}{x^2}$	10