

$y = f(x)$
 $y = \sqrt{x+2}$
 $f(x) = 0 \Rightarrow x = -2, x = -4$
 $f(x) > 0$ (در بازه $(-4, -2)$)
 $f(x) < 0$ (در بازه $(-2, 0)$)

$x = -5, x = 2$
 f را به $[-4, 5]$

x	$f(x)$	x	$f(x)$
-	+	-	$[-4, -2]$
+	-	-	$[-2, 0]$
-	-	+	$(0, 2)$
+	+	+	$[2, 5]$

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

$y = \sqrt{\frac{-x}{f(x)}}$
 $\frac{-x}{f(x)} \geq 0$
 $f(x) \neq 0$
 $x = -3, x = 0, x = 2$ (بازه $(-3, 0)$)
 $f(-3) = 0, f(0) = 0, f(2) = 0$ (بازه $(0, 2)$)

$f(x) < 0 \rightarrow -3 < x < -1 \rightarrow -$
 $f(x) > 0 \rightarrow -1 < x < 0 \rightarrow +$
 $f(x) < 0 \rightarrow 0 < x < 2 \rightarrow -$
 $f(x) > 0 \rightarrow 2 < x < 5 \rightarrow +$

$D = (-3, 0) \cup (0, 2)$

$f(-2) - 2f(2) = 4 + 4 + 2 = 10 \rightarrow f(-2) = 10$
 $f(2) - 2f(-2) = 4 - 4 + 2 = 2$
 $-f(2) = 2 \Rightarrow f(2) = -2$

$f(x) = \sqrt{x+2}$
 $x > 3 \Rightarrow f(x) = 0 - \sqrt{5+2} = 0 - 3 = -3 \Rightarrow f(f(x)) = f(-3)$
 $x < 3 \Rightarrow f(x) = 3 \Rightarrow f(f(x)) = f(3) = 5$
 $f(f(0)) + f(f(1)) = ?$
 $0 + 2 = 2$

$f(x) = ax^2 + bx + c$
 $f(x-1) - f(x) = 4x + 4$
 $a - b = ? \rightarrow -3 - 0 = -3$
 $-4a = 4 \rightarrow a = -1$
 $-3 + b = 2 \rightarrow b = 5$

$f(x-1) = a(x-1)^2 + b(x-1) + c$
 $a(x^2 - 2x + 1) + b(x-1) + c = ax^2 - 2ax + a + bx - b + c$
 $f(x-1) - f(x) = (ax^2 - 2ax + a + bx - b + c) - (ax^2 + bx + c) = -2ax + a - b$
 $-2ax + a - b = 4x + 4$
 $-2a = 4 \Rightarrow a = -2$
 $a - b = 4 \Rightarrow -2 - b = 4 \Rightarrow b = -6$

$$f(n) = n^2 - 3n + 1$$

$$f(-1) = (-1)^2 - 3(-1) + 1 \rightarrow 5$$

$$\frac{f(1) + f(-1)}{f(1)} = ?$$

$$\Rightarrow \frac{5}{1} = 5$$

$$\rightarrow f(1) - f(-1) = 1 + 4 = 5$$

$$\rightarrow f(1) [f(-1)]^2 = f(1) - (-1)^2 = 0$$

$$f(1) = 1^2 - 3(1) + 1 = -1$$

$$f(2) = \int_{n^2}^{n^2+1} \frac{1}{n^2} \cdot n^2 \cdot n^2$$

$$f(1) = 1^2 + 1 = 2$$

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

$$f(-1) = 1$$

$$f(1) = 1^2 + 1 = 2$$

$$f(1, 2), (2, 2), (1, 2), (2, 2)$$

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

$$f(n) = \frac{n^2 + 5n + 9}{n^2 + 5n + 0}$$

$$f(1) = 1^2 + 5(1) + 9 = 15$$

$$= (1^2 - 1)^2 + 5(1^2 - 1) + 9 = 9$$

$$f(\sqrt{15} - 1)$$

$$\rightarrow (15 - 2\sqrt{15}) + 5(\sqrt{15} - 1) + 9 = 15$$

$$f(1) + 5n + 9 = 1(1^2 + 5(1) + 9) + 9$$

$$f(\sqrt{15} - 1) = \frac{15 + 9}{2} = 12$$

$$f(1) = 1 + \frac{5}{1^2 + 5(1) + 0} = \frac{16}{6}$$

$$f(1) = \frac{1^2 + 5(1) + 9}{1^2 + 5(1) + 0} = \frac{15 + 9}{6} = \frac{24}{6} = 4$$

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

$$f(\sqrt{n})^2 = n + \frac{1}{n} \rightarrow n + \frac{1}{n} + 1 - n - \frac{1}{n} = 1$$

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