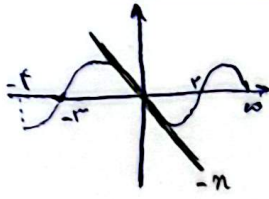


$x f(x) > 0$
در شکل از $x=0$ به بعد
منفی می شود
نشان

$D_f = [-\infty, 0) \cup [2, \infty)$

(1)



بازه	$(-\infty, -2)$	$(-2, 0)$	$(0, 2)$	$(2, \infty)$
$f(x)$	-	+	-	+
$-x$	+	-	+	-
$-x f(x)$	-	-	-	-

$D = (-\infty, -2) \cup (0, 2)$
سه عدد صحیح

(2)

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

(3)

$f(f(\omega)) + f(f(1)) = \omega$
 $f(1) \rightarrow 1 + 2 = 3$
 $f(\omega) \rightarrow \omega - 2 = 2$
 $f(x) \rightarrow x + 2 = 2$

(4)

$f(n-1) = a(n-1) + b(n-1) + 1$
 $f(n-1) - f(n) = -an + a + b = 4n + 1$
 $-an = 4n$
 $a = -4$
 $-r + b = 1$
 $b = 5$

(5)

$\frac{f(f(3)) + f(-1)}{f'(2)} = \frac{1}{1} \sqrt{1}$
 $f(3) = 9 - 9 + 1 = 1$
 $f(-1) = 1 + 2 + 1 = 4$
 $f(2) = 4 - 4 + 1 = 1$

(6)

$\frac{f(f(2)) - f(f(-2))}{f(2)} \rightarrow \frac{39 - 1}{2} = \frac{38}{2} = 19$
 $f(2) = 2(2) + 1 = 5$
 $f(-2) = (-2)^2 = 4$
 $f(x) = 2x + 1$

(7)

$f(f(\sqrt{x-1}))$
 $n = \sqrt{x-1}$
 $n + 2 = \sqrt{x}$
 $(n+2)^2 = x$
 $n^2 + 4n + 4 = x$
 $n^2 + 4n = x - 4$
 $f(n) = \frac{(n^2 + 4n) + 9}{(n^2 + 4n) + 5} = \frac{-1 + 9}{-1 + 5} = \frac{8}{4} = 2$
 $f(\sqrt{x-1}) = 2$
 $f(x) = \frac{x^2 + f(x) + 9}{x^2 + f(x) + 5} = \frac{f(x) + 9}{f(x) + 5}$
 $\frac{21}{14}$

(9)

$f(x) = 1$
 $f(1) = 4$
 $f(2) = 2$
 $f(3) = 4$
 $f(4) = 4 - 4 = 0$
 $f(1) = 4 - 2 = 2$

(8)

$f(\sqrt{n}) = n + \frac{1}{n}$
 $(f(\sqrt{n}))^2 = (n + \frac{1}{n})^2 = n^2 + 2 + \frac{1}{n^2}$
 $n^2 + 2 + \frac{1}{n^2} = (n^2 + \frac{1}{n^2}) + 2 = \frac{n^4 + 1}{n^2} + 2 = \frac{n^4 + 1 + 2n^2}{n^2} = \frac{(n^2 + 1)^2}{n^2}$

(10)