

Domain: x-values

Range: y-values

1. Determine the domain and range of each function:

a. $y = x + 4$

domain: $(-\infty, \infty)$

range: $(-\infty, \infty)$

b. $y = \sqrt{2x - 1}$

$2x - 1 \geq 0$
 $x \geq 1/2$

domain: $[1/2, \infty)$

range: $[0, \infty)$

c. $y = \sqrt{x}$

domain: $[0, \infty)$

range: $[0, \infty)$

d. $y = \frac{5}{x-1}$

$x - 1 \neq 0$
 $x \neq 1$

domain: $(-\infty, 1) \cup (1, \infty)$

range: $(-\infty, 0) \cup (0, \infty)$

Function Notation

$y = 3x + 5$ can be written to $f(x) = 3x + 5$

2. Let $f(x) = -x^2 + 5x - 3$ and $g(x) = 2x + 4$. Find each of the following:

a. $f(2)$

$f(2) = -(2^2) + 5(2) - 3$
 $= -4 + 10 - 3$
 $= 3$

b. $f(q)$

$f(q) = -q^2 + 5q - 3$

c. $g(a+1)$

$g(a+1) = 2(a+1) + 4$
 $= 2a + 2 + 4$
 $= 2a + 6$

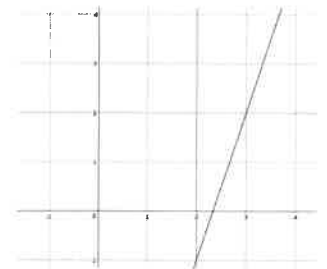
3. For each function, find $f(3)$

a. $f(x) = 3x - 7$

$f(3) = 3(3) - 7$
 $= -1$

b. $f = \{(-3, 5), (0, 3), (3, 1), (6, -1)\}$

$f(3) = 1$

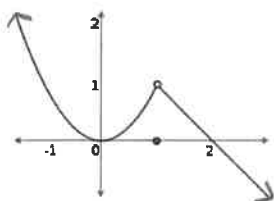


$f(3) = 2$

Continuity:

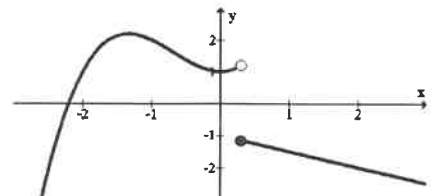
4. Describe the intervals of continuity for each function

a.



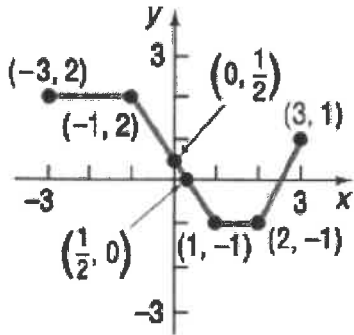
$(-\infty, 1) \cup (1, \infty)$

b.



$(-\infty, 1/2) \cup (1/2, \infty)$

7. Determine where the function is increasing, decreasing, and constant.

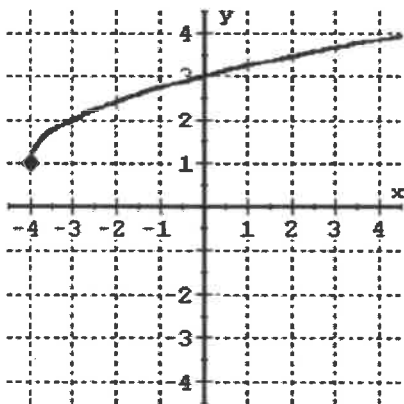


increasing: $(2, 3)$

decreasing: $(-1, 1)$

constant: $(-3, -1) \cup (1, 2)$

8.



Domain: $[-4, \infty)$

Range: $[1, \infty)$

Relative Min: $(-4, 1)$

Relative Max: none

Intervals - Increasing: $[-4, \infty)$

Decreasing: none

Constant: none

Zeros: none