

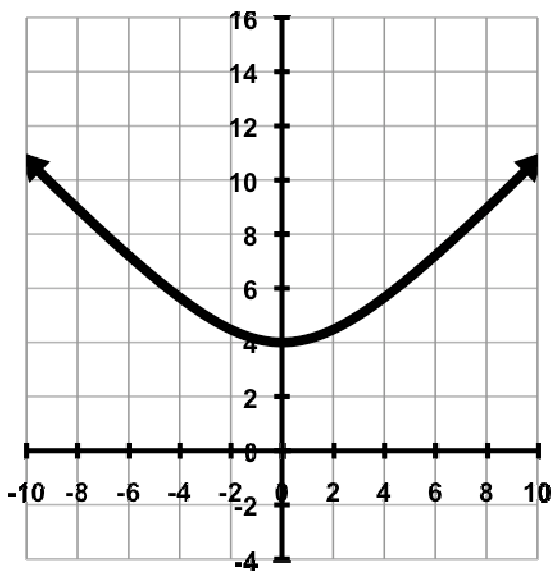
Review for Test #2 over Sect 8.1 - 8.3

Work all the problems on a separate piece of paper showing all steps.

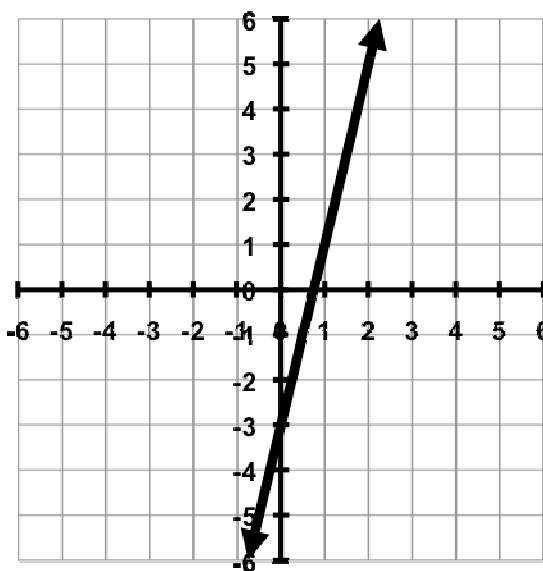
a) Is the following relation a function? Why or why not?

b) Find the domain. c) Find the range.

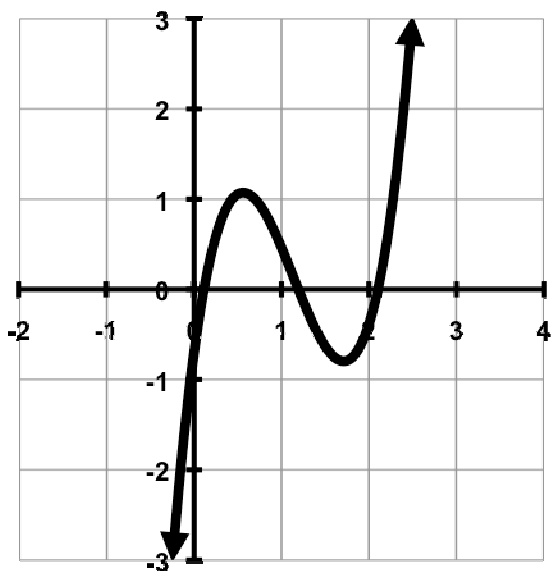
1)



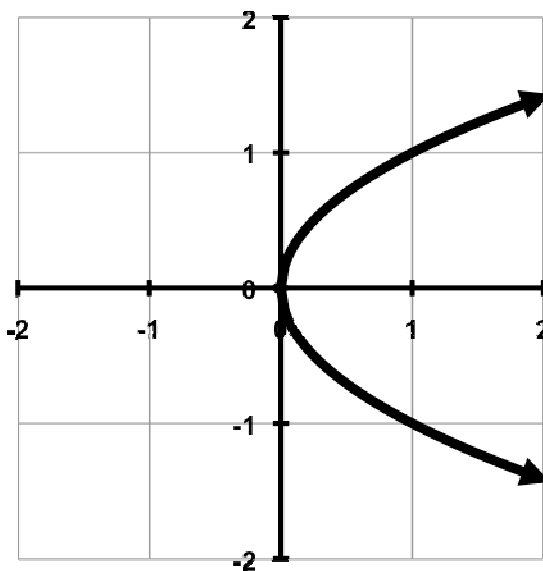
2)



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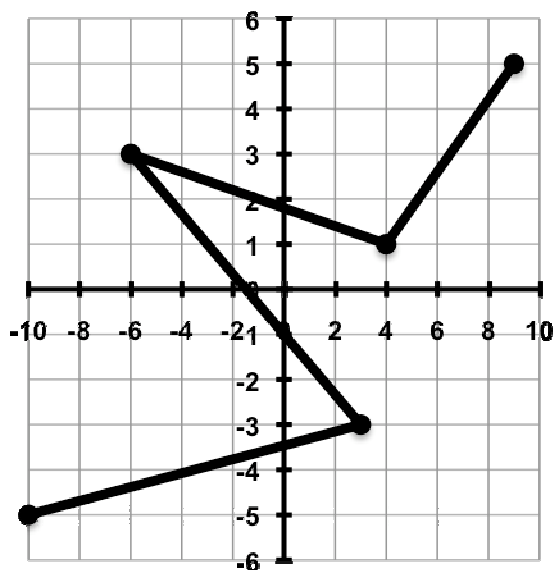
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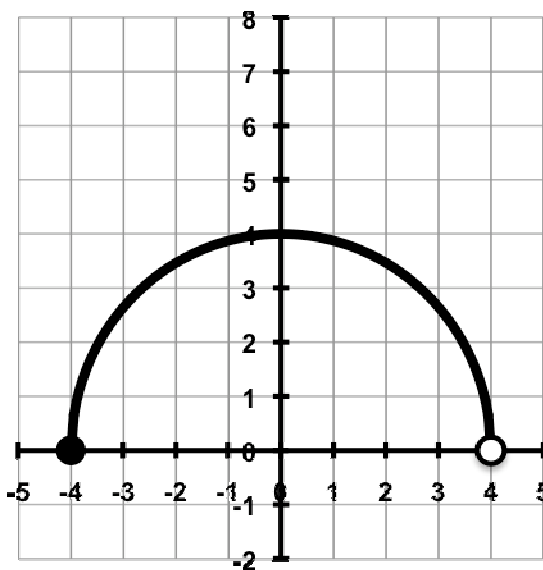
a) Is the following relation a function? Why or why not?

b) Find the domain. c) Find the range.

5)



6)



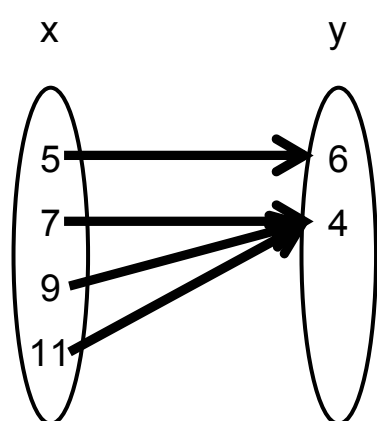
7) $f = \{(1, 3), (2, 4), (3, 5)\}$

8) $f = \{(1, 4), (2, 4), (3, 7)\}$

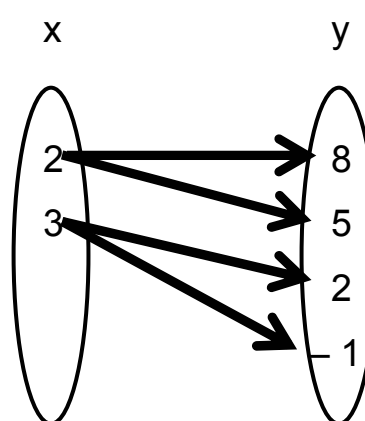
9) $f = \{(2, 3), (2, 4), (3, 5)\}$

10) $f(x) = 7x - 5$

11)



12)



Find the functions values given: $f(x) = \frac{3x-4}{2x+8}$

13) $f(0)$

14) $f(-5)$

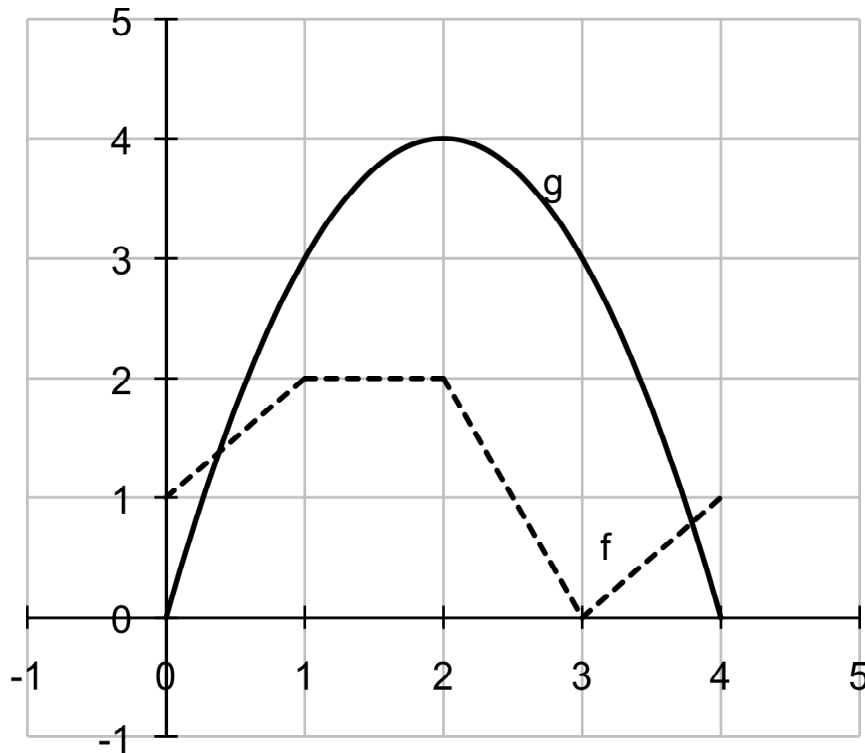
15) $f(-4)$

16) $f\left(\frac{4}{3}\right)$

17) $f(h)$

18) $f(e + 5)$

Use the graph of $f(x)$ and $g(x)$ below questions 19 through 24:



- 19) Find $f(2) \cdot g(2)$. 20) Find all values of x such that $g(x) = 0$.
- 21) Find $f(1) + g(1)$. 22) Find all values of x such that $f(x) = 1$.
- 23) Determine the interval where f is increasing, decreasing, and constant.
- 24) Determine the interval where g is increasing, decreasing, and constant.

Find the domain of the following functions:

25) $f(x) = \sqrt{3-2x}$

26) $g(x) = \frac{3x-12}{8x^4+18x^3-35x^2}$

27) $h(x) = 7x^3 - 3x^2 + 5$

28) $h(x) = \sqrt{x^2 + 25}$

Evaluate the following if $g(x) = -2x^2 + 3x$ and $f(x) = 7x - 3$:

29) $f(3) \cdot g(3)$

30) $\frac{g(-2)}{f(-2)}$

31) $g(2) + f(2)$

32) $f(4) - g(4)$

Find a linear function (if possible) satisfying the following conditions and sketch the graph:

- 33) The line passes through the points (9, 4) and (− 3, 4).
 34) The line passes through the points (4, − 7) and (8, − 2).
 35) The line passes through the point (− 3, 4) and the slope is $\frac{5}{3}$.
 36) The line passes through the points (2, 6) and (2, − 3).

Sketch the graph of the following from memory:

- 37) $f(x) = \sqrt{x}$ 38) $g(x) = x^2$ 39) $h(x) = x^3$
 40) $r(x) = \frac{1}{x}$ 41) $p(x) = |x|$ 42) $a(x) = x$

Identify the type of function:

- 43) $p(x) = |x - 3| + 2$ 44) $h(x) = 4x^2 - 6$
 45) $h(x) = \frac{7x^3}{x^2 + 5}$ 46) $g(x) = 3\sqrt{x}$
 47) $f(x) = 2/3$ 48) $h(x) = 3x - 4$

Answers:

- 1a) Yes 1b) Domain: $(-\infty, \infty)$ 1c) Range: $[4, \infty)$
 2a) Yes 2b) Domain: $(-\infty, \infty)$ 2c) Range: $(-\infty, \infty)$
 3a) Yes 3b) Domain: $(-\infty, \infty)$ 3c) Range: $(-\infty, \infty)$
 4a) No 4b) Domain: $[0, \infty)$ 4c) Range: $(-\infty, \infty)$
 5a) No 5b) Domain: $[-10, 9]$ 5c) Range: $[-5, 5]$
 6a) Yes 6b) Domain: $[-4, 4]$ 6c) Range: $[0, 4]$
 7a) Yes 7b) Domain: $\{1, 2, 3\}$ 7c) Range: $\{3, 4, 5\}$
 8a) Yes 8b) Domain: $\{1, 2, 3\}$ 8c) Range: $\{4, 7\}$
 9a) No 9b) Domain: $\{2, 3\}$ 9c) Range: $\{3, 4, 5\}$
 10a) Yes 10b) Domain: $(-\infty, \infty)$ 10c) Range: $(-\infty, \infty)$

11a) Yes 11b) Domain: {5, 7, 9, 11} 11c) Range: {4, 6}

12a) No 12b) Domain: {2, 3} 12c) Range: {-1, 2, 5, 8}

13) $-\frac{1}{2}$ 14) 9.5 15) undefined 16) 0 17) $\frac{3h-4}{2h+8}$

18) $\frac{3e+11}{2e+18}$ 19) 8 20) {0, 4} 21) 5 22) {0, 2.5, 4}

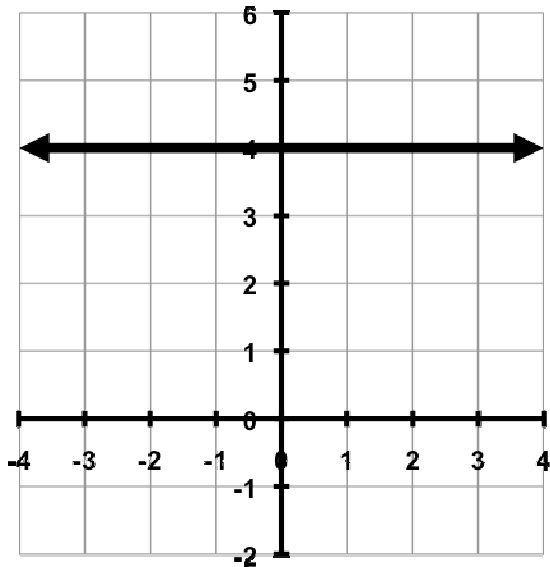
23) f is increasing on (0, 1) \cup (3, 4). f is decreasing on (2, 3).
f is constant on (1, 2).

24) g is increasing on (0, 2). g is decreasing on (2, 4).
g is constant nowhere.

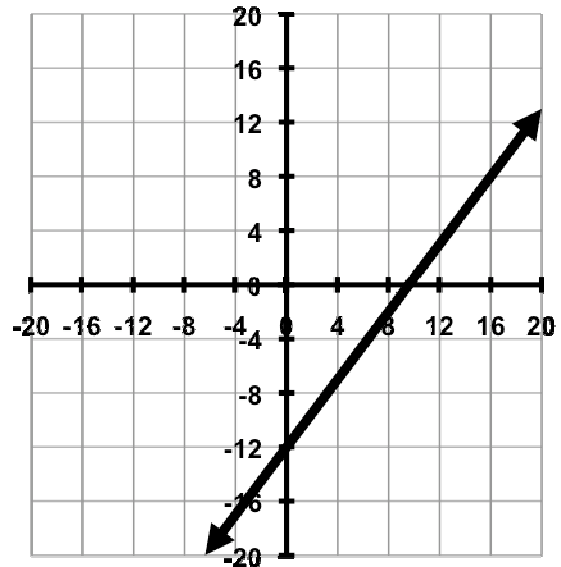
25) $(-\infty, 1.5]$ 26) $(-\infty, -3.5) \cup (3.5, 0) \cup (0, 1.25) \cup (1.25, \infty)$ 27) $(-\infty, \infty)$

28) $(-\infty, \infty)$ 29) -162 30) $\frac{14}{17}$ 31) 9 32) 45

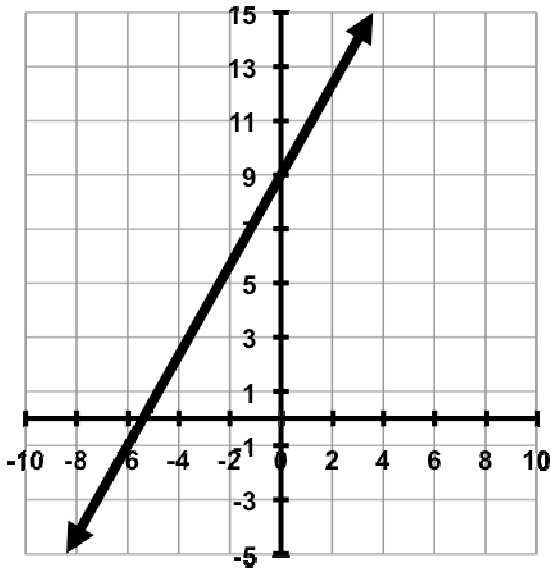
33) $f(x) = 4$



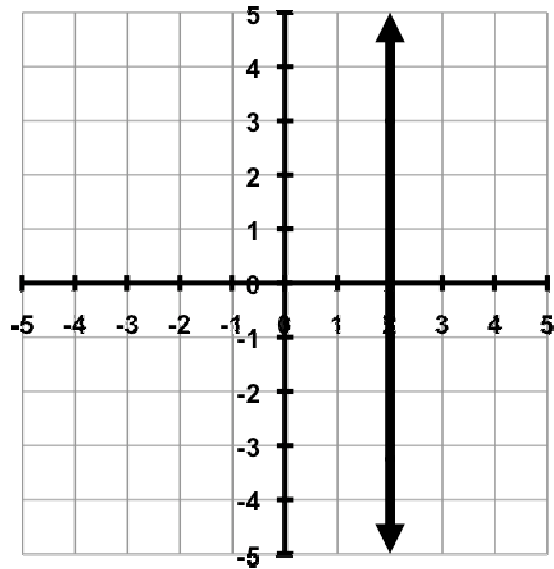
34) $f(x) = \frac{5}{4}x - 12$



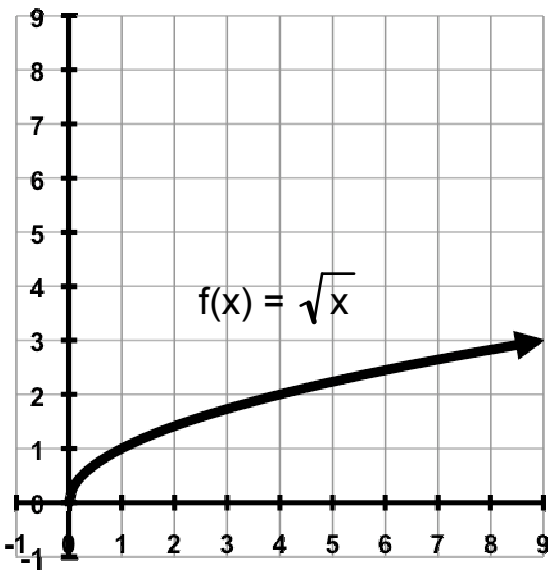
35) $f(x) = \frac{5}{3}x + 9$



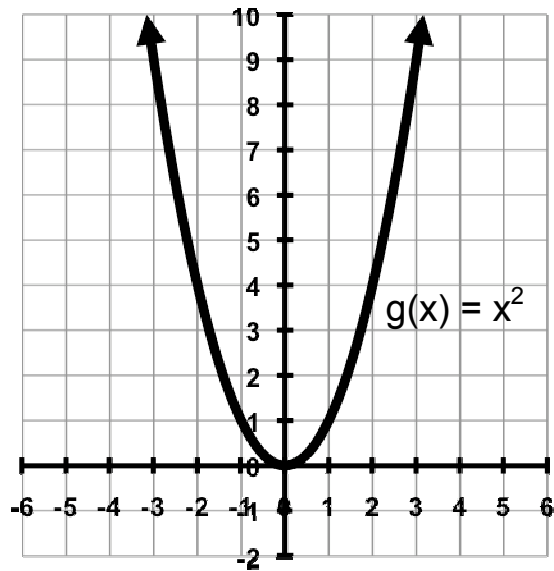
36) Not possible ($x = 2$)



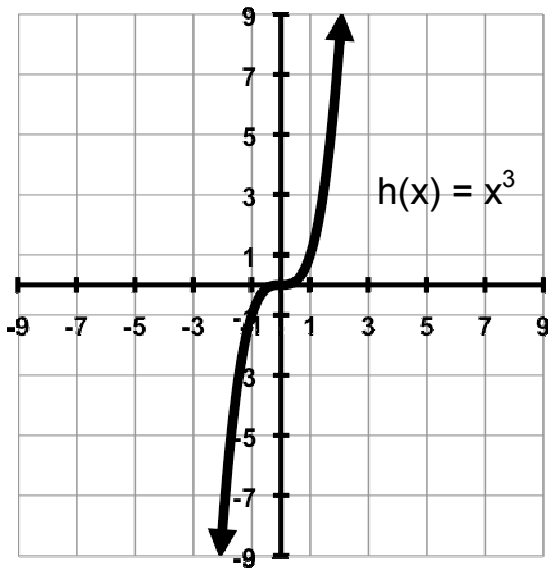
37)



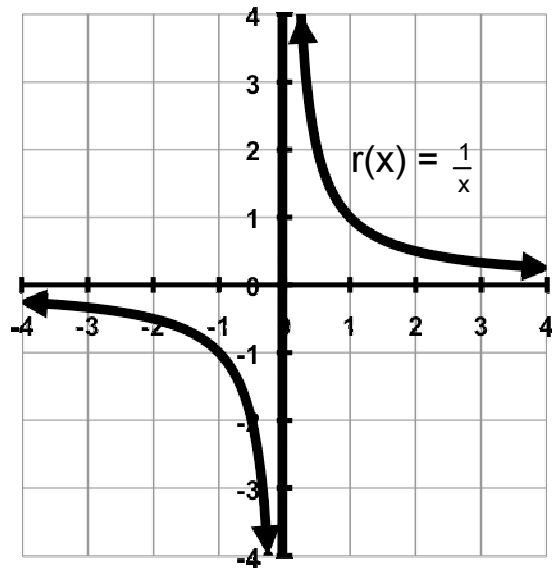
38)



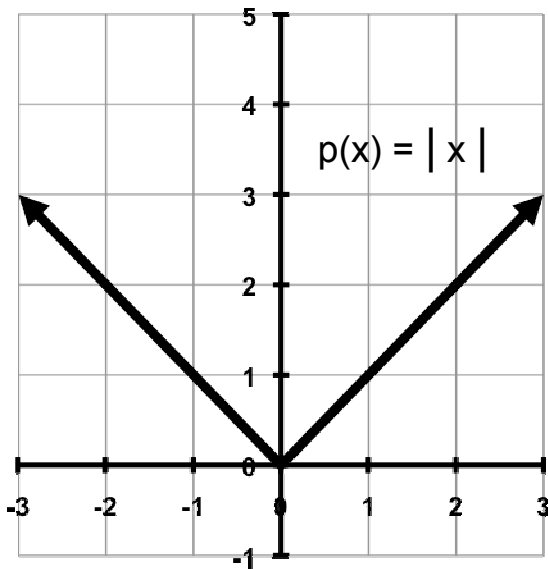
39)



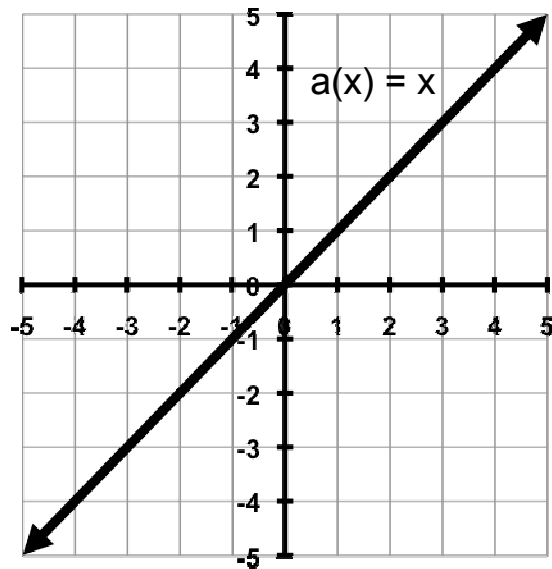
40)



41)



42)



43) Absolute Value Function

45) Rational Function

47) Constant Function

44) Quadratic Function

46) Square Root Function

48) Linear Function