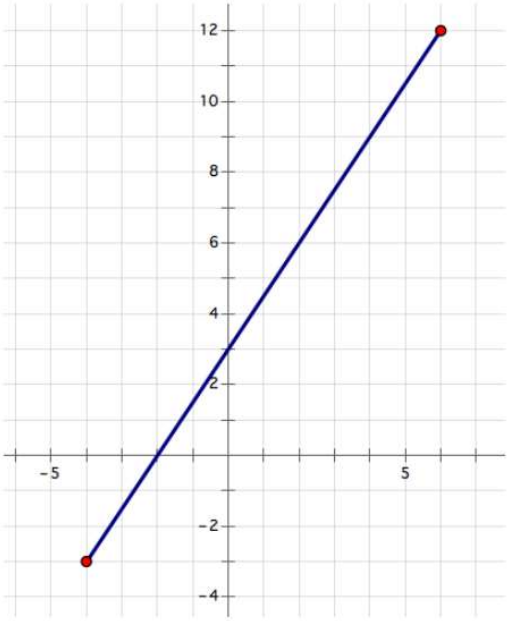
Lesson 3.4 Notes

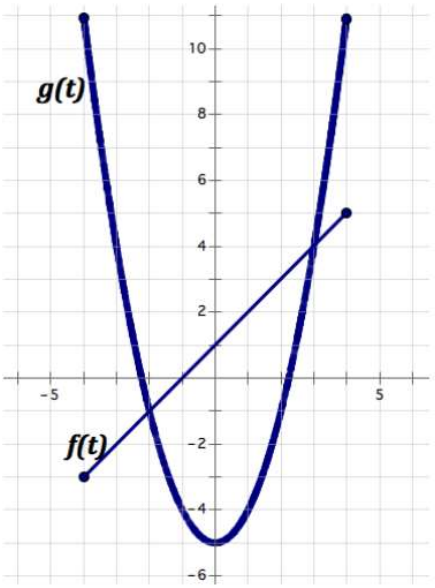


Answer the following questions for $f(x)$.

1) What is $f(2)$? $f(2) = 6$
2) For what values, if any, does $f(x) = 3$? $f(x) = 3$ when $x = 0$
3) What is the x −intercept? $(-2, 0)$
4) What is the domain of $f(x)$? $[-4, 6]$
5) What is the range of $f(x)$? $[-3, 12]$
6) For what values, if any, does $f(x) = 0$? $f(x) = 0$ when $x = -2$
7) What is $f(4)$? $f(4) = 9$
8) On what intervals is $f(x)$ decreasing?

   $f(x)$ is not decreasing

Consider the linear graph of $f(t)$ and the nonlinear graph of $g(t)$ to answer the questions.



9) Where is $f(t) = g(t)$? $f(t) = g(t)$ when $t = -2$ and $t = 3$
10) Where is $f(t) > g(t)$? $f(t) > g(t)$ on the interval $(-2, 3)$
11) Which is greater: $f(0)$ or $g(-3)$? $f(0) = 1$ and $g(-3) = 4$, so $g(-3)$ is greater.
12) What is the domain of $f(t)$? $[-4, 4]$
13) What is the range of $g(t)$? $[-5, 11]$
14) For what values does $g(t) = 4$?

    $g(t) = 4$ when $t = -3$ and $t = 3$
15) What is $f(1)$? $f(1) = 2$

The following table of values represents two continuous functions, $f(x)$ and $g(x)$. Use the table to answer the questions.

x	f(x)	g(x)
-5	44	-13
-4	30	-9
-3	20	-5
-2	12	-1
-1	6	3
0	2	7
1	0	11
2	0	15
3	2	19
4	6	23
5	12	27
6	20	31

16) What is $g(-3)$? $g(-3) = -5$
17) For what value(s) is $f(x) = 0$? $f(x) = 0$ when $x = 1$ and $x = 2$
18) For what values does $f(x)$ seem to be increasing? $f(x)$ seems to be increasing on the interval $(2, 6)$.
19) What is $f(4)$? $f(4) = 6$
20) For what value(s) is $g(x) = 3$? $g(x) = 3$when $x = -1$

For each function find the indicated values.

1) Given: $g(x) = 5x - 3$

a. $g(-1) =$_____

$g(-1) = 5(-1) - 3$

$g(-1) = -5 - 3$

$g(-1) = -8$

b. $g(x) = 12,\ x =$_____

$12 = 5x - 3$

$+3 \quad +3$

$15 = 5x$

$\frac{}{5} \quad \frac{}{5}$

$3 = x$

c. $g(10) =$_____

$g(10) = 5(10) - 3$

$g(10) = 50 - 3$

$g(10) = 47$

d. $g(x) = -33,\ x =$_____

$-33 = 5x - 3$

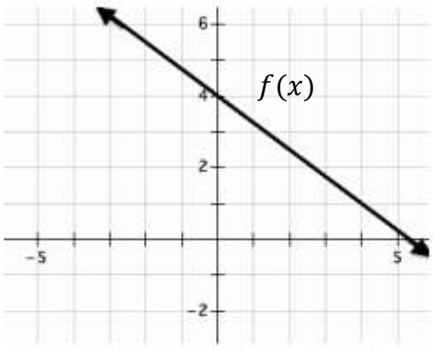
$+3 \quad +3$

$-30 = 5x$

$\frac{}{5} \quad \frac{}{5}$

$-6 = x$

2)



a. $f(4) =$_____

$f(4) = 1$

b. $f(x) = 1,\ x =$_____

$f(x) = 1$ when $x = 4$

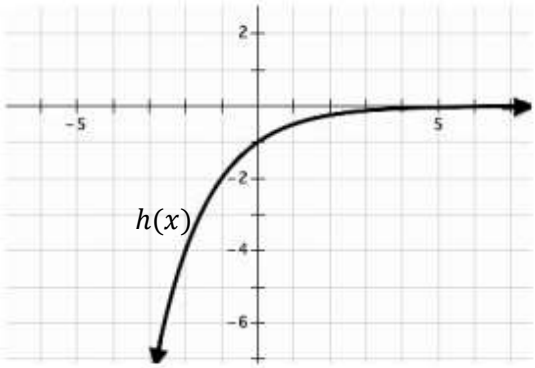
c. $f(0) =$_____

$f(0) = 4$

d. Write the explicit rule for $f(x)$.

$f(x) = -\frac{3}{4}x + 4$

3)



a. $h(-2) =$_____

$h(-2) = -4$

b. $h(x) = -2,\ x =$_____

$h(x) = -2$ when $x = -1$

c. $h(0) =$_____

$h(0) = -1$

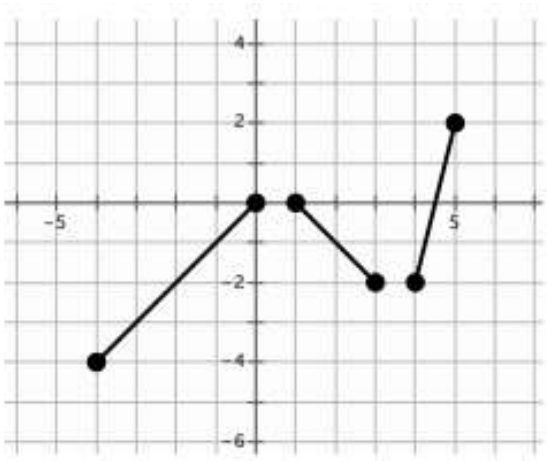
d. Write the explicit rule for $h(x)$.

$h(x) = \left(\frac{1}{2}\right)^x \cdot -1$

x	$h(x)$
-2	-4
-1	-2
0	1

For each graph state a) the interval(s) where it is increasing, decreasing, or constant, b) the minimum or maximum value (if it exists), c) identify the domain and range, d) intercepts, and e) determine whether the function is continuous, discrete or discontinuous. Use interval notation.

1)



a. Increasing: $(-4, 0) \cup (4, 5)$

Decreasing: $(1, 3)$

Constant: None

b. Minimum: -4

Maximum: 2

c. Domain: $[-4, 0] \cup [1, 3] \cup [4, 5]$

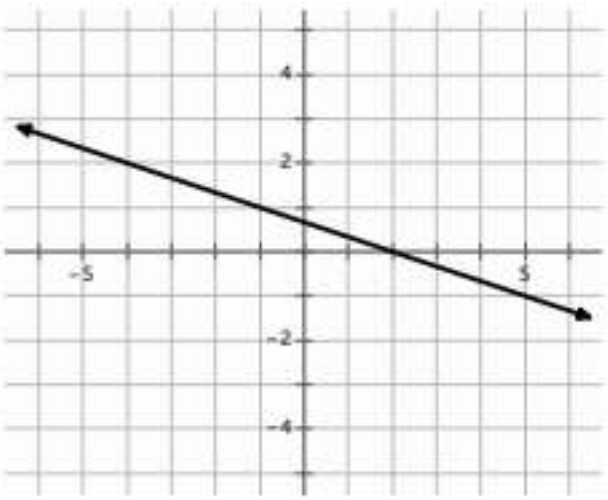
Range: $[-4, 2]$

d. x-intercept(s): $(0, 0), (1, 0), \& \left(4\frac{1}{2}, 0\right)$

y-intercept: $(0, 0)$

e. Circle one: Continuous Discrete Discontinuous

2)



a. Increasing: None

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

Constant: None

b. Minimum: $-\infty$

Maximum: ∞

c. Domain: $(-\infty, \infty)$

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

d. x-intercept(s): $(2, 0)$

y-intercept: $\left(0, \frac{2}{3}\right)$

e. Circle one: Continuous Discrete Discontinuous

3)

a. Increasing: $(-\infty, 3)$

Decreasing: None

Constant: None

b. Minimum: $-\infty$

Maximum: 3

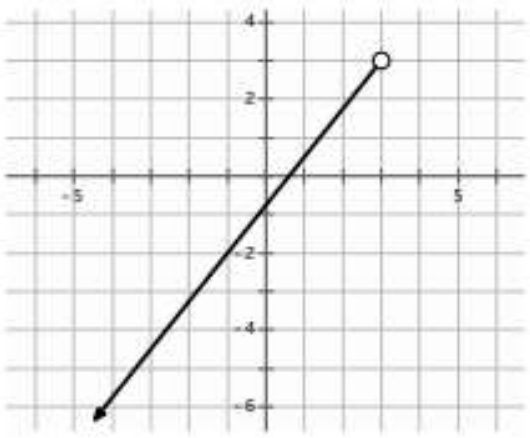
c. Domain: $(-\infty, 3)$

Range: $(-\infty, 3)$

d. x-intercept(s): $\left(\frac{3}{5}, 0\right)$

y-intercept: $\left(0, -\frac{3}{4}\right)$

e. Circle one: Continuous Discrete Discontinuous



4)

a. Increasing: None

Decreasing: $(0, \infty)$

Constant: None

b. Minimum: 0

Maximum: 1

c. Domain: $(0, \infty)$

Range: $(1, 0)$

d. x-intercept(s): None

y-intercept: None

e. Circle one: Continuous Discrete Discontinuous