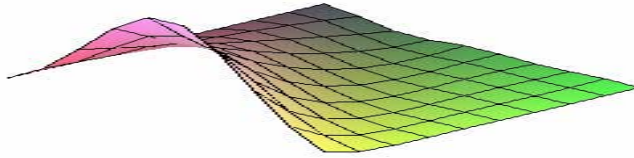


MA 107 INTERMEDIATE ALGEBRA
-A JUST IN TIME APPROACH-
PRACTICE TEST ONE

Sections: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6.



1. Simplify. [1.1, 1.2, 1.6]

a) $8\left(.125 + \frac{1}{8}\right)$

b) $-3.25 + 2.5 - (-1.75)$

c) $4\frac{1}{3} - 7\frac{1}{6} + 3\frac{1}{3}$

d) $(-3x)^3$

e) $0 - (-x)^2$

f) -7^2

g) $-(-3x)^4$

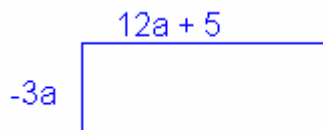
2. Simplify the expression using the calculator. [1.1, 1.2]

a. $\frac{-6 + \sqrt{6^2 - 4(16)(-1)}}{2 \times 16}$

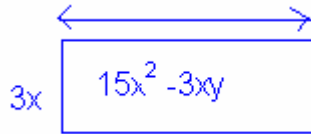
b. $d = \left\{ |6.76 - 7.91| + |7.14 - 7.19| + |9.83 - 7.91| \right\} \div 3$

c. $d = \sqrt{(3 - (-9))^2 + (-3 - 2)^2}$

3a) Find the area [1.2]



3b) Factor to find the dimensions. [1.2]



3c) Name the greatest common factor and then factor or simplify. [1.2]

i) $x^3 - 3x^2 + 2x$

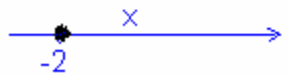
ii) $-x^2y + xz$

iii) $2x^3 - 4x^2 - 6x$

iv) $\frac{4xy^2 - 8x^2y}{4xy}$

v) $\frac{xy + yz}{x}$

4. Complete the table. [2.1]

Inequality	Number line	Inequality in words
		x is between -2 and 2
		y is greater than or equal to 3
$y < -1$		
		

5. Write the sentences in algebraic notation. [1.3]

- The output is 3 less than the product of 7 and the input.
- The output is one third the input decreased by 2.
- The sum of twice the input and six is the output.
- The output is the input multiplied by itself.
- Negative three added to the quotient of five and the input is the output.

6. Add like terms and simplify. [1.2]

- a. $y(2y-1) - y(2-4y)$
- b. $6s^2 + 4s - 4s - s^2$
- c. $a(3a-1) - a(4-2a)$
- d. $-x(3-x) - x(2-4x)$

7. Evaluate the following expressions. [1.2, 2.2]

- a) $2m^2 - 5m + 6$ for $m = 3, -3m, 1.5, \frac{3}{4}$
- b) $f(r) = -r^2 + 3$ for $r = 0, -1, 0.25, 1$.

8. Make an input-output table for each equation. Graph both equations. [1.3, 1.4, 2.2]

- a. $f(x) = -16x^2 + 32x$. Use as inputs the integers from 0 to 8.
- b. $f(t) = -16t^2 + 60t + 5$ Use as inputs the integers from -2 to 2.

9. Solve with a calculator table. Check with a graph as needed. Write answers in a solution set. [1.5, 2.2]

- a) $-6 = 3 - x^2$
- b) $192 = 128x - 16x^2$
- c) $9 - x^2 = 10$
- d) $2 - 3x - 2x^2 = 0$

10. Simplify one side of the equation before solving. [1.6]

- a. $x + 3(5 - x) = 21$
- b. $50.40 = x + 0.05x$
- c. $-5 - 3(4 - x) = -4.5$
- d. $5 - (-x + 2) = 2x + 1$

11. Solve the formula for indicated variable. [1.6]

- a) $S = 3\pi d + \pi a$ for d
- b) $P = a + (n - 1)d$ for n
- c) $T = 2\pi\sqrt{(L/g)}$ for L

d) $E = \frac{T_h - T_c}{T_h}$ for T_h

12. Solve the inequality. Record the solution on a number line.

a. $-5 < 3x - 4$

b. $3(2y + 4) \geq (y - 8)$

In exercise 13, guess a rule that associates the input set with the output set. [2, 2]

13. $\{3, 4, 5, 6\}$ with $\{-3.75, -4, -4.25, -4.5\}$

14. Use a table to fit an equation to the sequence of numbers. [1.3, 2, 4]

a. 1, 3, 5, 7, 9.....

b. 2, 0, -2, -4, -6

c. 4, 1, 0, 1, 4, 9

15. Find the equation of the line that passes through the two given points. [2, 3, 2.4, 2.5]

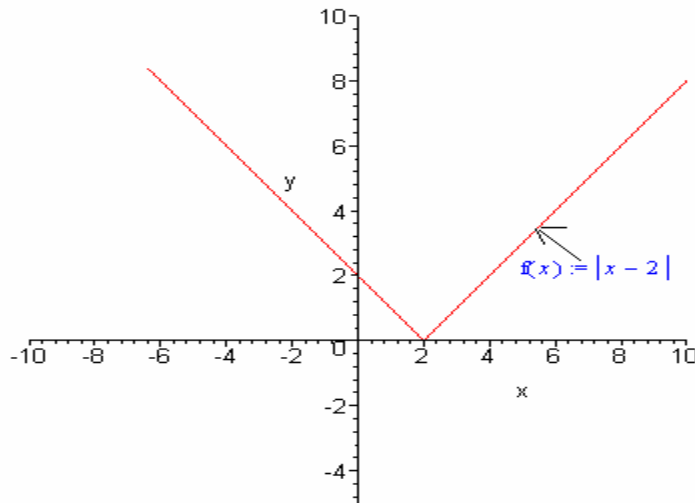
a. $(-2, -3), (-5, 1)$

b. A line m is perpendicular to the graph of $2x - 5y = 10$ and contains the point $(-4, -3)$. Find the equation for m .

c. Slope is undefined; x intercept is -2 .

d. Slope is zero, point $(2, 3)$

For exercise 16, use the graph in the figure below. Extend the graph as needed.



16. Solve these equations from the graph. [2.6]

a. $|x - 2| = 4$

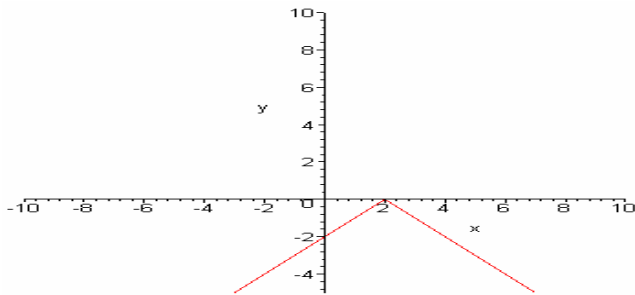
b. $|x - 2| = -4$

c. $|x - 2| = 0$

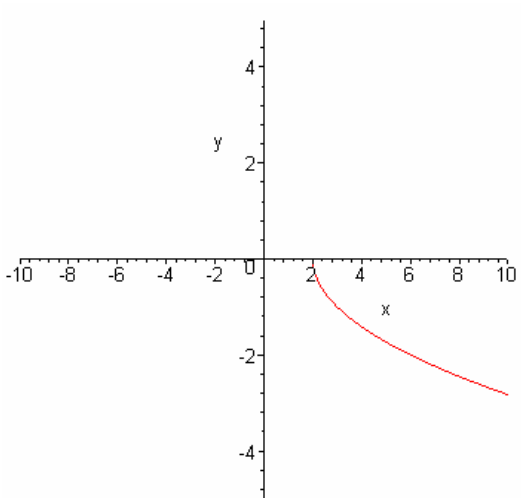
In exercise 17-19, answer the following questions.

- a) What is the domain?
- b) What is the range?
- c) Does the graph describe a function?

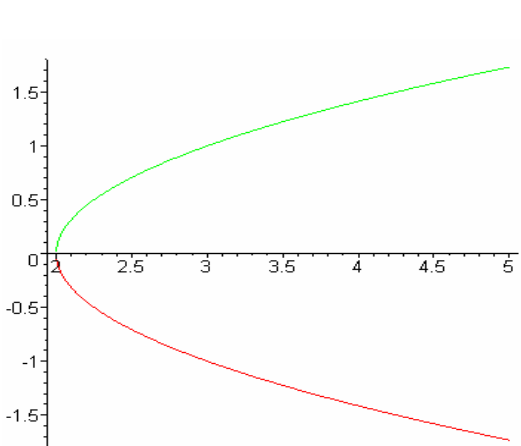
17.



18.



19.



Answers:

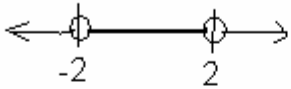
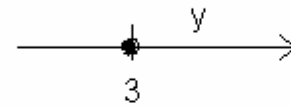
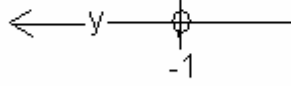
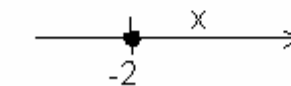
1a) 2 b) 1 c) $1/2$ d) $-27x^3$ e) $-x^2$ f) -49 g) $-81x^4$

2a) $1/8$ b) 1.04 c) d) $=13$

3) $-36a^2 - 15a$, 3b) $5x - y$

3c) i) $x(x^2 - 3x + 2) = x(x - 2)(x - 1)$ ii) $-x(xy - z)$ iii) $2x(x^2 - 2x - 3) =$

$2x(x - 3)(x + 1)$ iv) $4xy(y - 2x)$ v) $y + yz/x$

Inequality	Number line	Inequality in words
$-2 < x < 2$		x is between -2 and 2
$y \geq 3$		y is greater than or equal to 3
$y < -1$		y is less than -1
$x \geq -2$		x is greater than or equal to -2

4.

5a) $y = 7x - 3$

b) $y = \frac{1}{3}x - 2$

c) $2x + 6 = y$

d) $y = x^2$

e) $-3 + \frac{5}{x} = y$

6a) $6y^2 - 3y$

b) $5s^2$

c) $5a^2 - 5a$

d) $5x^2 - 5x$

7.

a) 9, $18m^2 + 15m + 6$, 3, $27/8$
 b) 3, 2, 2.9375, 2

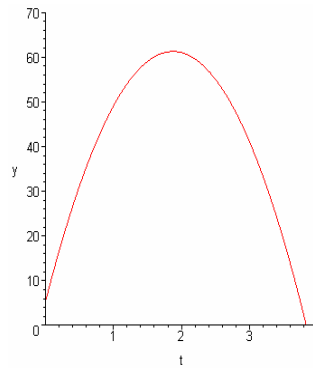
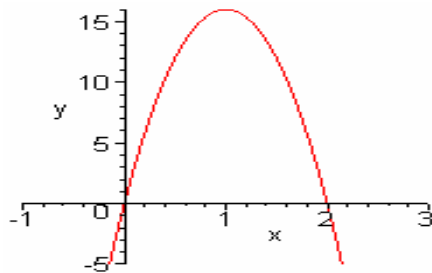
8a) $x^3 - 3x^2 + 2x$

x	y
0	0
1	16
2	0
3	-48
4	-128
5	-240
6	-384
7	-560
8	-768

b) $f(t) = -16t^2 + 60t + 5$

x	y
-2	-179
-1	-71
0	5
1	49
2	61

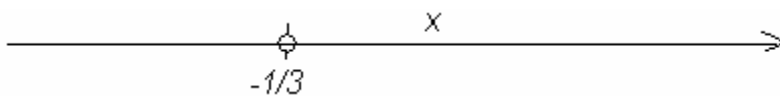
$f(x) = -16x^2 + 32x$



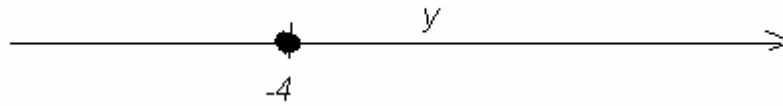
a. 9a) $\{-3, 3\}$ b) $\{2, 6\}$ c) $\{ \}$ or No real number solution d) $\{-2, 1/2\}$

10a) $x = -3$, b) $x = 48$ c) $4\frac{1}{6}$ d) $x = 2$

11a) $d = \frac{S - \pi a}{3\pi}$, b) $\frac{P - a + d}{d}$, c) $L = \frac{gT^2}{4\pi^2}$, d) $T_h = \frac{T_c}{1 - E}$



12a) $x > -1/3$



b) $y \geq -4$

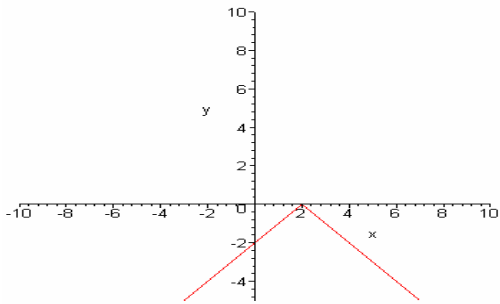
13. $y = -.25x - 3$

14a) $y = 2x - 1$, b) $y = -2x + 4$, c) $y = x^2$

15a) $\frac{-4}{3}x - \frac{17}{3}$, b) $m = \frac{-5}{2}x - 13$, c) $x = -2$, d) $y = 3$.

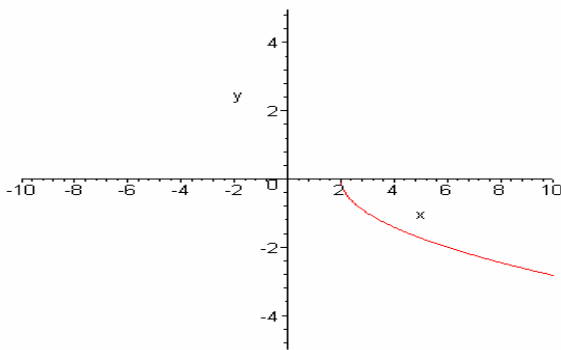
16. $\{-2, 6\}$, b) No solution, c) $\{2\}$

17.

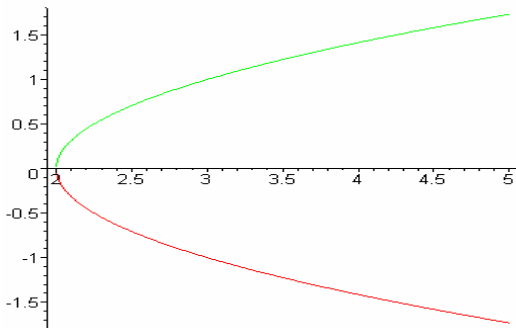


a) Domain: All Reals, b) $y \leq 0$, c) yes

18.



a) Domain: $x \geq 2$, b) $(-\infty, 0]$, c) yes



a) Domain: $x \geq 2$, b) $(-\infty, \infty)$, c) No.