

Name _____ (1 POINT)

Total Possible Points = 200 Points

Note: Show all work. Unless a problem is marked with an asterisk (*), use a calculator only to check.

When asked for the equation of a line, the equation should be given in slope-intercept form.

1. Simplify: $\left(\frac{x^{-3}y^7z^{-2}}{x^{-5}yz^4}\right)^3$ (Assume no variables are equal to zero.) (8 points)

(Must Show Procedure)

2. Simplify: (Assume no variables are equal to zero.) **(Must Show Procedure)** (9 points)

a. $\frac{24x^{-5}y^{-8}z^2}{3xy^{-5}}$

b. $(3yz^{-2})^{-3}$

c. $\left(\frac{15x^4y^{-7}}{10x^{-2}y^{-4}}\right)^{-3}$

*3. If $S = 2\pi rh + 2\pi r^2$

Evaluate S if $r = 5$ cm, and $h = 2$ cm

(5 points)

*4. Evaluate with your calculator and answer the following

(10 points)

a. $\frac{-8 \pm \sqrt{8^2 - 4(3)(2)}}{2(3)}$

b. $5332.01\left(1 + \frac{.035}{12}\right)^{12(8)}$ Assume this is a calculation involving money.

5. Let $g(x) = -2x^2 + 7x + 7$ and $f(x) = 4x - 17$

(9 points)

a. Find $f(4)$

b. Find $g(-3)$

c. Find x when $f(x) = 6$

*6. If $y = -2x^3 + 3x + 10$ use your calculator

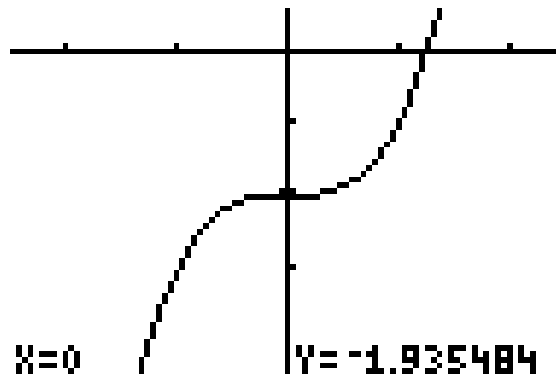
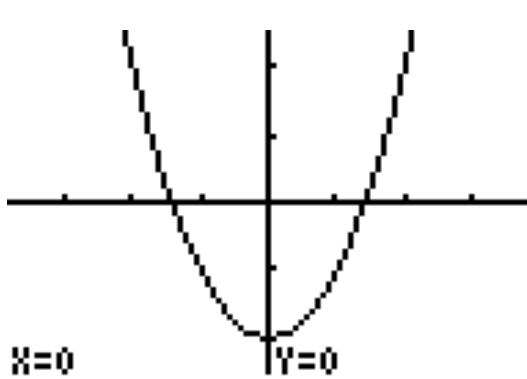
(10 points)

a) Find the x-intercept

b) Find the y-intercept

7. For each representation of a relation below, write “N” if it is not a function and “F” if it is a function. (10 points)

Relation a		Relation b		Relation c		Relation d	
x	y	x	y	x	y	x	y
1	1	1	4	2	0	1	0
2	2	2	3	2	2	2	2
3	2	3	2	-6	-8	3	2
4	5	2	1	4	9	4	3



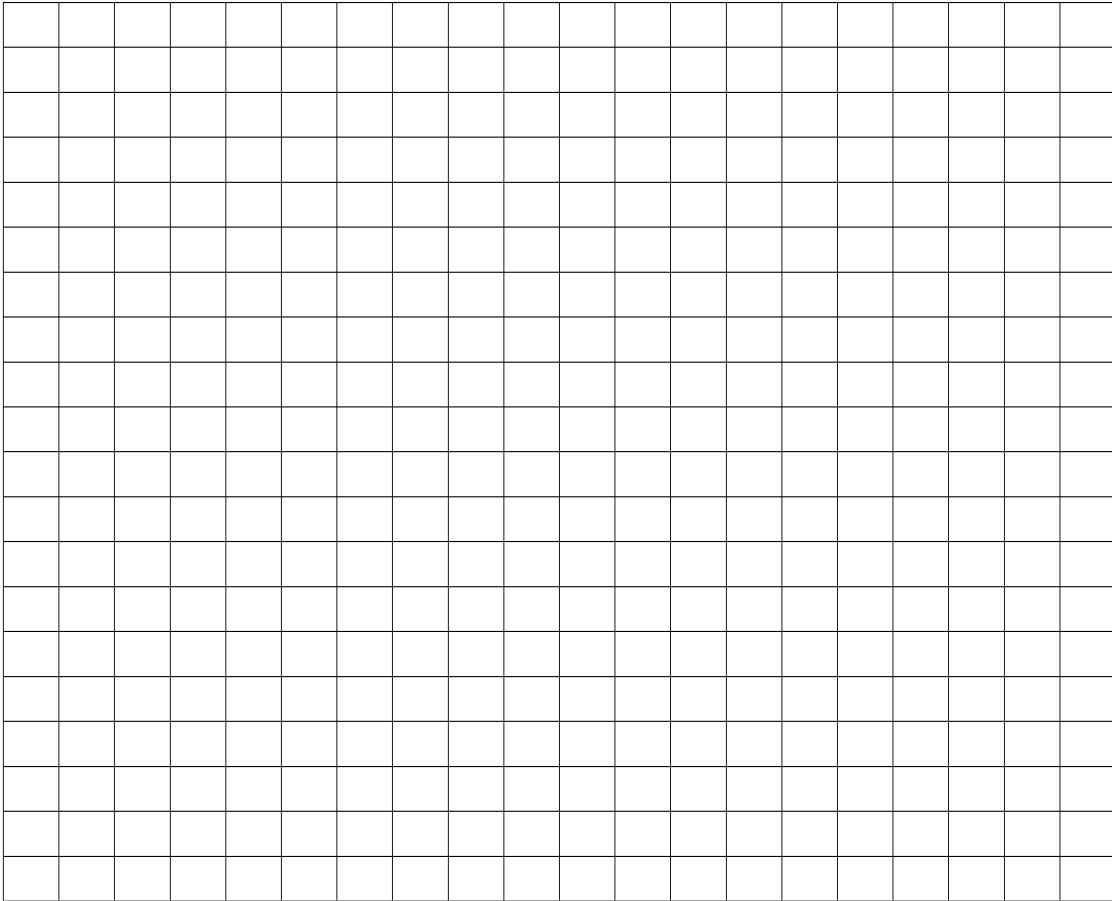
8. Write an equation of the line that passes through (1, 4) and is parallel to the line passing through the points (3, -6) and (-1, 2). (10 points)

9. On the graph below, graph the lines given in the xy -plane. Draw an appropriate axis and label the graph with an appropriate scale. Label each graph with the appropriate letter, a, b, or c. (10 points)

a. $y = \frac{2}{3}x - 3$

b. $y = -2$

c. $x = 4$



10. Find the equation of a line passing through $(-9, -3)$ and $(4, 10)$ (10 points)

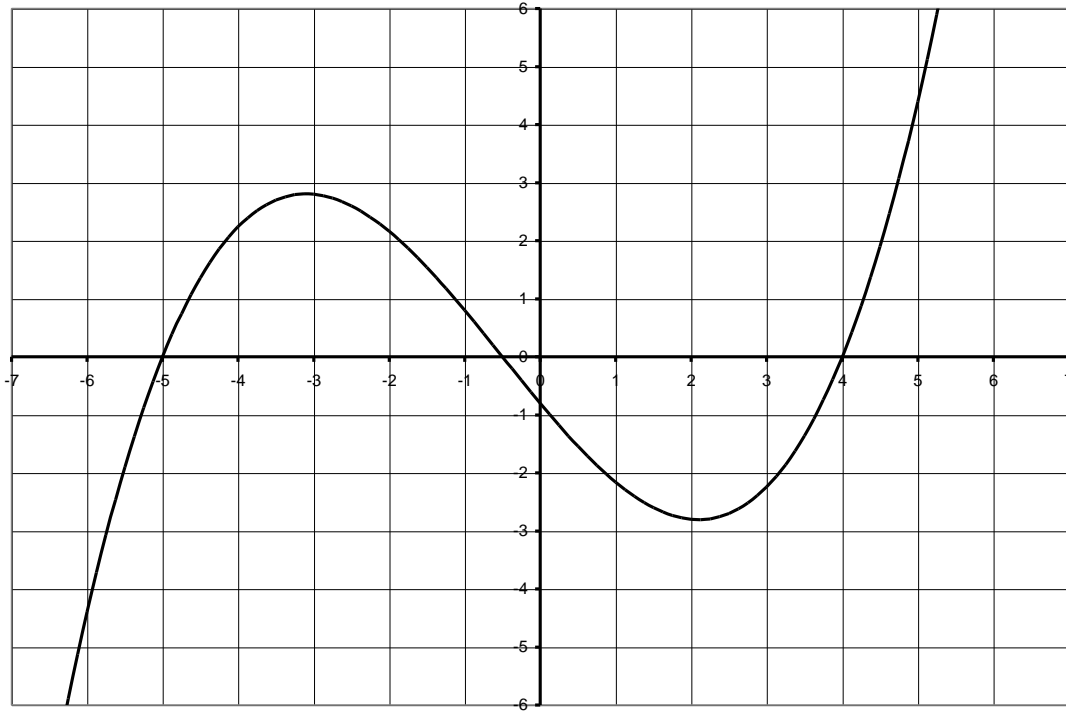
(Must Show Procedure)

11. The graph below is a graph of $f(x)$.

(10 points)

a. Find the approximate value of $f(-4)$

b. Find the approximate values of x so that $f(x) \cong 4.5$



12. Find the equation of a line perpendicular to $y = -4x + 7$

and passing through $(-4, -2)$ (**Must Show Procedure**)

(10 points)

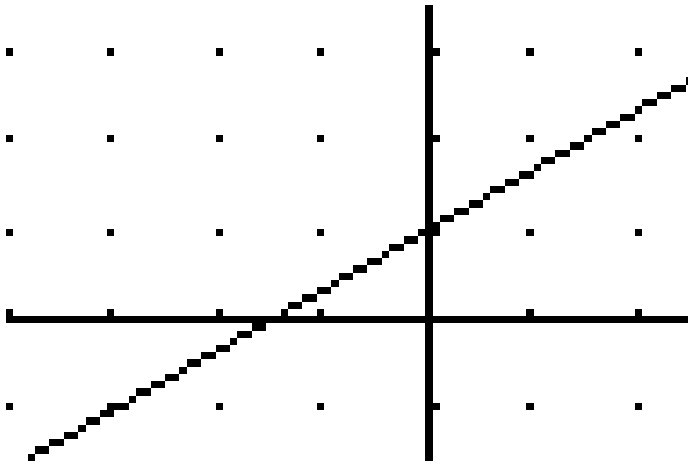
13. Find the equation of a line parallel to $-2x - 5y = 10$ and passing through $(4, -2)$

(**Must Show Procedure**)

(10 points)

14. Find the equation of the line shown below on the graph.
(Must Show Procedure)

(10 points)



15. The monthly fees for a condo association can be modeled by the following formula:
 $f(x) = 42x + 100$ where x is the number of years since the condo association was
built in 1990. (Must Show Procedure) (12 points)

*a. What were the monthly fees in 2002?

b. Determine the year when the monthly fees were \$478?

c. Interpret the slope as a rate of change.

(12 points)

16. Solve the following algebraically $\frac{3-5x}{5} = \frac{1}{2}x + 7$

(Must Show Procedure)

(12 points)

17. Solve algebraically. Show all steps.

a) $x^2 - y = -4$
 $3x^2 - y = 2$

b) $2x - 6y = -4$
 $5x - 7y = -4$

(16 points)

(Must Show Procedure)

18. Solve the following inequalities. Write your answer in interval notation.

a) $-\frac{5}{2}x + \frac{1}{3} \leq 2$

b) $3.1(3 - 2x) \leq -2.9x$

(16 points)

(Must Show Procedure)

19. In 1990 a bus company had 30 busses; in 1995 the company had 345 busses. Let $f(t)$ represents the number of busses t years after 1990. Assume $f(t)$ is a linear function.
- a. Find the slope of $f(t)$, and state what the slope represents in terms of the story?
- b. Use your slope and one ordered pair to write the equation for $f(t)$.
- c. Predict the number of busses in the year 2007.
- d. Determine the year when number of busses will be 1290.