Conic Review Worksheet 1
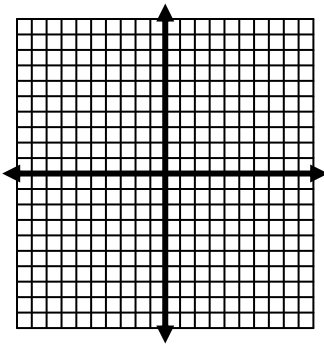
Name_____

Part I: Determine if the equation is a linear equation, parabola, circle, ellipse, or hyperbola. Justify your answer!{SHOW WORK ON SEPARATE SHEET!!!!}
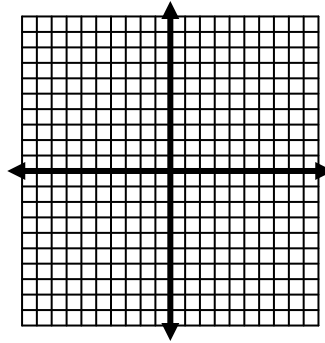
1) $y - 8 = \frac{1}{2}(x+2)^2$

2) $y + 8 = 4x - 11$

3) $x^2 + y^2 = 12$

4) $(x-2)^2 + y^2 = 1$

5) $x + y^2 = 10$

6) $\frac{(x+1)^2}{16} - \frac{(y-3)^2}{4} = 1$

7) $x(x + 5) + y(8 - y) = 10$

8) $4x^2 + 6y^2 = 24$

9) $4x + x^2 + 8 = 20 - y^2 + 2y$

10) $3x + 10 = 8y + y^2 - 4$

11) $12 = 7x + 3y - 2$

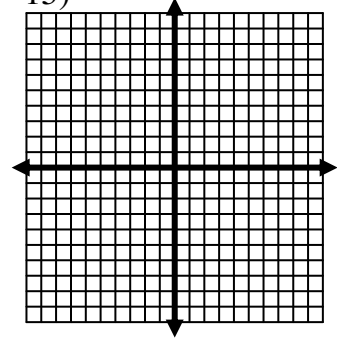12) $\frac{(y-1)^2}{9} + x^2 = 1$

Part II: Graph Each

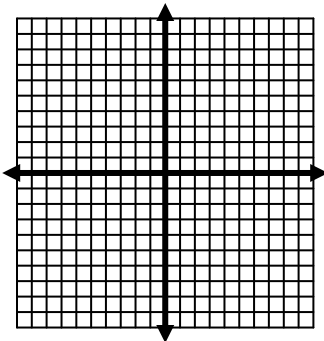13) $\frac{(x+2)^2}{25} + \frac{(y-5)^2}{9} = 1$
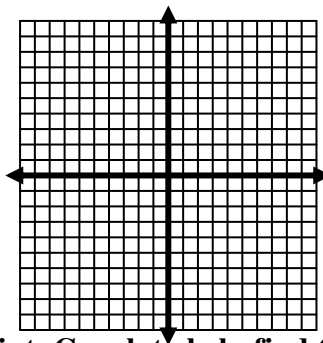
14) $\frac{(y+2)^2}{4} - \frac{(x-1)^2}{36} = 1$

15) $x^2 - 9y^2 = 36$
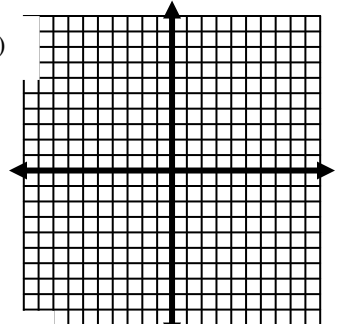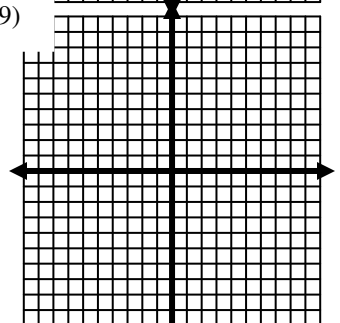
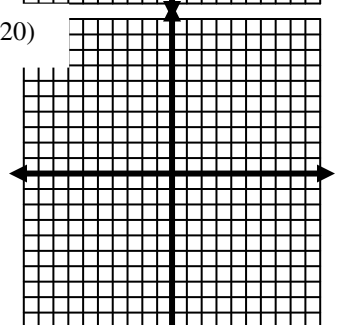16) $9x^2 + y^2 + 14y = 32$

17) $9(y - 6)^2 - 16(x + 2)^2 = 144$

18)

Part III: Find the equation for 18-22: { Hint: Graph to help find the equation }

18) Center (7, 3) Vertex (7, 9) Focus (7, -2)

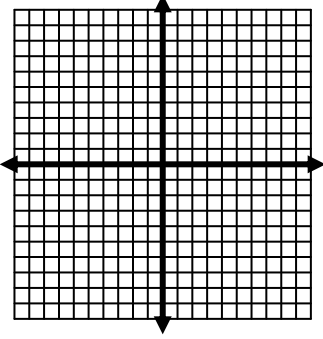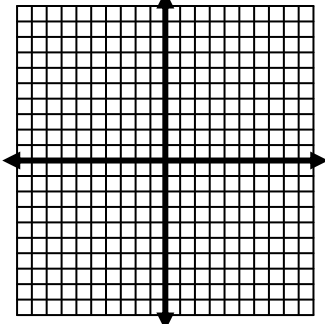19) Asymptotes: $y = -\frac{5}{4}x + 1$ $y = \frac{5}{4}x - 9$ Focus (4, 3)

20) Focus (12, 8) Directrix: x = -2

19)

20)

21) Ellipse with Center(1,2), vertex at (4,2) and contains the point (1,3)

22) Ellipse with Foci(2,7) and (-2,7) and the length of the major axis is 6.

23) The cables of a suspension bridge are in the shape of a parabola. The towers supporting the cables are 400ft apart and 100ft tall. If the supporting cable that runs from tower to tower is only 30 feet from the road at its closest point. Find the length of one of the vertical support cables that is 60 feet from the towers.

100ft
?
60 ft
400ft
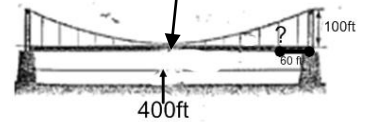
24) Whispering Gallery: The figure below shows the specifications for an elliptical ceiling in a hall designed to be a whispering gallery. In an whispering gallery, a person standing at one focus of the ellipse can whisper and be heard by another person standing at the other focus, because all the sound waves that reach the ceiling from one focus are reflected to the other focus. If the hall below is 140 feet in length with 30 feet tall ceiling at its highest point. How far from the end walls will the foci point be?
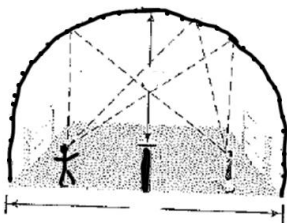
1) Write the equation of the line in **standard form** that passes through the point $(-4,3)$ and is parallel to the line $y = \dfrac{-2}{3}x + 8$.

2) Write $y = 2x^2 + 4x + 8$ in vertex from.

Solve each equation. Show all your work!!!

3) $2x^2 - 33x + 81 = 0$

Let $f(x) = -x^2 + 5x - 14$ Simplify.   No negative exponents.

5)   Find: $-\dfrac{2}{3}f(-3)$ 6) $\dfrac{(12x^3 y^8 z^{11})^2}{18x^{-4} y^{17} z}$

Find the inverse of each function.

7) $y = \dfrac{5}{4}x + 6$

An initial population of 850 wood ducks is decreasing at an annual rate of 11%.

8) Write an exponential function that models the wood duck population. Define your variables!!!

An initial population of 850 wood ducks is decreasing at an annual rate of 11%.

9) Estimate the wood duck population after 9 years.

You drink a Coke one hour before this quiz in hopes that it will improve your alertness for the exam.   There are 50mg of caffeine in one bottle of Coke.

10a) Using the formula $A(t) = A_0 e^{kt}$ write a function the models the amount of caffeine left in your body.

10b)   If you only have 30 mg of caffeine left in your body 30 minutes after drinking the entire bottle of Coke.   Find the constant rate of decay(k) that caffeine is being used by your body.

11)   Find the number of mg of caffeine in your body after 3 hours.

12)   Find out how long it will take before you only have 2 mg of caffeine in your system.

Evaluate each logarithm.

15) $3\log_6 3 - \dfrac{1}{2}\log_6 729$

Write each logarithm as a single logarithm.

16) $\log 6 + \log 2 - \log 24$ 17) $3\log x - 6\log y$

Expand each logarithm.

18) $\log_5 \dfrac{m^3}{4z^2}$

19) $\log (2x^2 y^{-3})^2$

20) $_9P_3$

21) Two die are rolled. What is the probability that you roll a sum of 8?

22) The 10-member math team randomly selects 4 representatives to send to the next math contest. What is the probability that the 4 member teams consist of the 4 members with the lowest score?

23) Find the probability that a point chosen at random inside the square does not fall inside the circle.

10cm
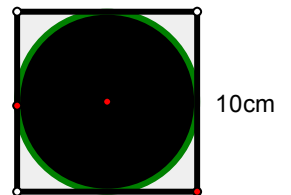
24) How many different meals can be ordered from a restaurant if the menu contains 8 appetizers, 10 main dishes, and 5 desserts?

25a) How many 3 digit #'s can be formed using

#'s 2,3,5,8,9?

b) If the 3 digit # must be greater than 500?

c) If the 3 digit # must be less than 375?

26) In how many ways can 6 hockey players be chosen from a group of 12?

27) Let $f(x) = \begin{cases} 5x^3 - 2 \text{ if } x < -6 \\ 3x^2 - 2 \text{ if } -6 \le x < 7 \\ 7 + 2x \text{ if } x \ge 7 \end{cases}$.

Find $f(-6) = $ _____

28) 3 dice are rolled. Find the theoretical probability that each dice would be a multiple of 3.

29) A certain chain of ice cream stores sells 28 different flavors, and a customer can order a single-, double-, or triple-scoop cone. Suppose on a multiple-scoop cone that the order of he flavors is important and that the flavors can be repeated. How many possible cones are there?

30.

x	2	3	4	5	6	7
y	5	10	17	26	37	50

a) What type of parent function does the data best represent in the model above?_____

31. Graph the function

$$f(x) = \begin{cases} -3x - 4 & \text{if } -\infty < x \le -2 \\ \dfrac{1}{2}x + 3 & \text{if } -2 < x < \infty \end{cases}$$

b) Use your TI to find the equation of the function.

c) Find f(20)=