Math-2 Name_____ ID: 1

SM2 HW #5-6 (Quadratic Modeling: AREA)

Date_____ Period____

1) A company's profit can be modeled by the equation $p(u) = -u^2 + 180u + 1000$ where 'u' is the number of units sold. Find the maximum profit of the company. How many units should the company sell to maximize profit? (hint: set your window to xmin=-20, xmax=200 to see the sides of the parabola then adjust your ymax to see the vertex of the parabola.

2) The path of a football kicked by Nick Folk flies along a parabolic path that can be modeled by the following equation:
y = -0.026 x(x-46) (where x is the is the horizontal postion in yards and y is the height in yards.
What is the maximum horizontal distance he can kick the ball?

3) The width of a rectangle is 3 more than twice its length. If the area of the rectangle is 100 square feet, what is the length and width of the rectangle?

4) The width of a rectangle is 4 more than 5 times its length. If the area of the rectangle is 1000 square feet, what is the length and width of the rectangle?

5) The length of a rectangle is 5 less than twice a number. The width of the rectangle is 5 more than the same number. If the area of the rectangle is 200 square feet,
a) What is the number?
b) what is the length of the rectangle
c) What is the width of the rectangle?

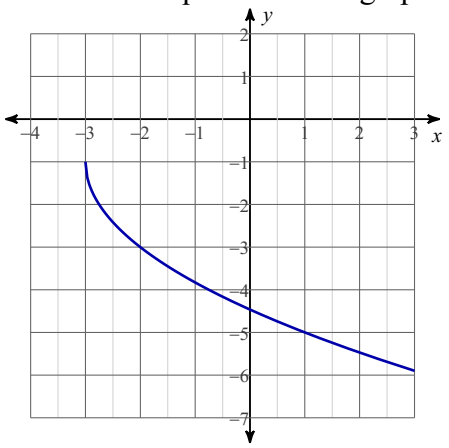
6) You have 250 feet of fence to build a rectangular corral adjacent to a lake. The side next to the lake is not fenced.

a) Write the equation used to calculate the area.
b) What is the maximum area enclosed by the fence?
c) What are the side lengths of the corral?

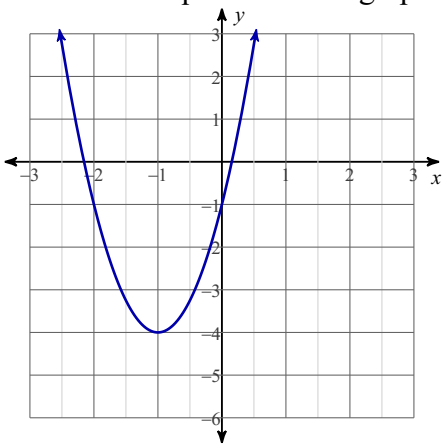
7) You have 300 feet of fence. What is the maximum area enclosed by the fence?

a) Write the equation used to calculate the area.
b) What is the maximum area enclosed by the fence?
c) What are the side lengths of the corral?

8) What is the equation of the graph?



9) What is the equation of the graph?



a) Factor each trinomial (provide the intercept form of the equation).
b) Determine the "zeroes" of the equation (remember the Zero Product Property!)

10) $r^2 + 4r - 21 = 0$

11) $n^2 - 5n + 4 = 0$

12) $6v^2 + 4v - 10 = 0$

13) $21v^2 - 24v + 3 = 0$

Find the "zeroes" of the equations by finding square roots.

14) $x^2 = -63$

15) $y = 2(x + 3)^2 + 24$

a) Convert these unfactorable standard form quadratic equations to vertex form

b) Find the zeroes

16) $m^2 + 4m - 53 = 0$

17) $x^2 + 18x + 79 = 0$