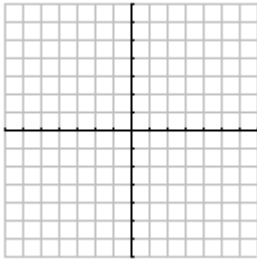


Secondary Math III  
Graphing Quadratic Functions  
Assignment 2.4

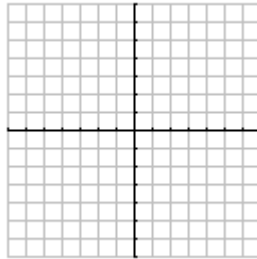
Name \_\_\_\_\_  
Period \_\_\_\_\_

Graph the following quadratic functions *without* a graphing calculator. You may *check* your graph with a graphing calculator. Label the vertex and two other points.

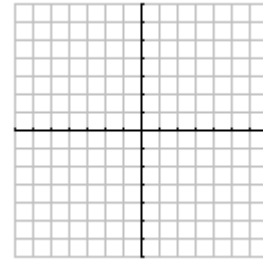
1.  $f(x) = x^2 - 6x + 1$



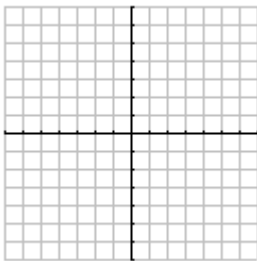
2.  $g(x) = (x+1)^2 - 5$



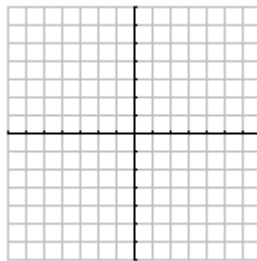
3.  $v(x) = -x^2 + 4x - 4$



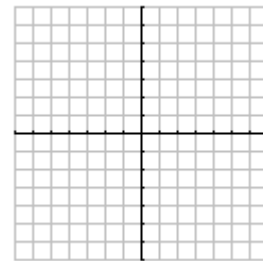
4.  $k(x) = \frac{1}{2}(x+4)(x-2)$



5.  $m(x) = -2(x+2)^2 - 1$



6.  $j(x) = (x-2)(x-4)$



Find the maximum or minimum value of the quadratic function by finding the vertex and considering the value of  $a$ . State whether it is a minimum or a maximum.

7.  $f(x) = 3x^2 + 12x - 24$

8.  $f(x) = -3(x+1)^2 - 5$

9.  $p(x) = (x+2)(x-6)$

10. If the vertex of a parabola is  $(5, -2)$  and the value of  $a$  is  $-4$ , does the graph cross the  $x$ -axis? Give a reason for your answer.

11. Charlie kicks a soccer ball through a hoop that is 80 feet away from Charlie and 20 feet high. The equation modeling the path of the ball is  $h(x) = -\frac{1}{80}x^2 + \frac{5}{4}x$ . Determine the maximum height of the ball.

12. It costs Acme Manufacturing  $C$  dollars per hour to operate its golf ball division. An analyst has determined that  $C$  is related to the number of golf balls produced per hour ( $x$ ) by the function  $C(x) = 0.009x^2 - 1.8x + 100$ . What number of balls per hour should Acme produce to minimize the cost per hour?

13. If a soccer ball is kicked straight up with an initial velocity of 32 feet per second, then its height above the ground is given by  $s(t) = -16t^2 + 32t$  where  $t$  is the time in seconds and  $s$  is the height in feet. Graph this function for  $0 \leq t \leq 2$ . What is the maximum height reached by the ball?

