

# C11 - 3.0 - Quadratics Functions/Equations Review

1) Graph with a table of values

$$y = x^2 - x - 2$$

2) Graph and state: vertex, direction of opening, maximum or minimum value, axis of symmetry, domain and range, any intercepts.

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

b)  $y = -x^2 + 4$

c)  $y = x^2 + 1$

d)  $y = (x + 5)^2 - 1$

e)  $y = -2(x + 2)^2 + 2$

f)  $y = \frac{1}{2}(x - 1)^2 - 2$

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

3) Complete the square.

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

b)  $y = 2x^2 - 8x + 9$

c)  $y = x^2 + 8x$

d)  $y = \frac{1}{2}x^2 + 4x + 2$

e)  $y = \frac{1}{2}x^2 + \frac{1}{4}x + 2$

4) Find the Vertex  $-b/(2a)$

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

5) Describe the transformations of

$$f(x) = x^2 :$$

a)  $y = (x + 1)^2 - 3$

b)  $y = 2(x - 2)^2 - 5$

6) Find the Quadratic Function  $y =$   
(Show Algebra):

a) Vertex: (3, -2) and Point (2,6)

b) Vertex: (1,1) and  $y - \text{int} = -2$

c) Vertex: (-2, -1) and Point (-4,1)

d)  $x - \text{int} = -1$  &  $3, y \geq -4$

e) AOS:  $x = 1, \text{max}: y = 8, y - \text{int} = 6$

f) Points: (1, -2), (3, -2) & (4,4)

## Numbers

7) Find two numbers:

a) Who differ by 10 and product of the larger number and twice the smaller number is a minimum.

b) Who sum to 8 and the sum of their squares is a minimum.

## Geometry

8) Find the dimensions of the largest possible:

a) 3-sided rectangular enclosure bounded on a river with total 40m of fencing.

c) Rectangular fence that is split in half with 3 sides perpendicular to a wall. The total fencing length is 42 m.

## Find Equation

9) A bridge has pillars 30 m tall and are 100 m apart. The maximum at the center of the bridge is 80 m tall. Find the equation of the parabolic bridge. What is the height 5 m away from each pillar.

## Revenue

10) Find the price that will maximize revenue:

A student sells candy to all of his friends. Each candy costs 6 dollars, and he has 10 friends who buy the candy each day. Every time he increases the cost by 1 dollar, 1 of his friends decides not to buy the candy.

## 11) MaxMin/Solving/Systems/Inequalities

a) The height vs distance of a bow and arrow shot off a cliff on an angle is represented by the following equation:  $h = -2d^2 + 8d + 10$

Find maximum height and the horizontal distance it took to get there. Find the height of the cliff.

b) The height vs time of a Rocket shot straight up off a removable mount with velocity  $50 \frac{m}{s}$  is represented

by the following equation:  $h = -4.9t^2 + 50t + 1$

Find maximum height and the time it took to get there. Find the height of the mount.

1) Table of Values

2) Graph/Vertex

Opening/Max or Min

Axis/Domain & Range

Intercepts

3) Vertex

4) Complete the square

5) Transformations

6) Find Equation

7-10) Word Problems