**LEARNING GOALS**

**By the end of today’s lesson, I will be able to:**

1. Understand how the sign of the Leading Coefficient effects concavity
2. Find the vertex of a Quadratic Equation using Completing the Square
3. Find the vertex of a Quadratic Equation by solving for the roots and then finding Vx and Vy
4. Use your calculator to find a vertex

For each of the following, do we have a maximum or a minimum.

EXAMPLE 1

Given

1. Will we have a maximum or minimum?

1. Find the vertex

We have 3 methods

i ) Complete the Square

ii) Factor to Determine Roots/Zeros

iii) Use

1. Complete the Square

1. Factor to Determine Roots

Remember the Vertex occurs at the midpoint of the roots

1. Use the shortcut.

EXAMPLE 2 - Use your graphing calculator to find the vertex

Verify with

EXAMPLE 3 - Solve a Problem to Determine when a max value occurs

Demand for a Magazine Cost of a Magazine

P(x) = -6x + 40 C(x) = 4x + 48

Revenue = (Demand)(# Sold)

Profit = Revenue - Cost

The Maximum profit will occur at the \_\_\_\_\_\_\_\_\_\_

HW

P.153 3ab, 4b, 5b, 6, 7b, 8

MCR3U – Chapter 3 Quadratic Functions

3.3 Inverse of Quadratics

**LEARNING GOALS**

**By the end of today’s lesson I will be able to:**

1. Use algebra to find the Inverse of a Quadratic Equation
2. Understand that the Inverse of a Quadratic Equation is not a function unless restricted
3. Recognize that you can only find the Inverse of a Quadratic from Vertex Form
4. Graph the Inverse of a Quadratic on your calculator
5. Solve word problems relating to Inverse

Recall in Chapter 1 we learned how to find the Inverse of a Function by switching the x and y values and solving for y.

We use the same process to find the Inverse of a Quadratic.

EXAMPLE 1

D = { }

R = { }

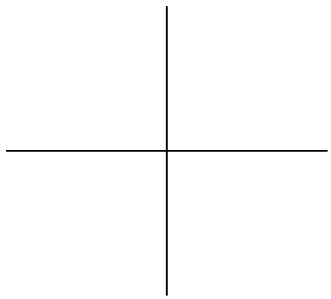
1. Let y represent *f(x)* 2*.* Switch x and y
2. Solve for y, use reverse bedmas

1. Let *f -1(x*) represent y 5. Not a function unless restricted

  D = {

R = {

EXAMPLE 2



EXAMPLE 3

The rate of change in the Surface Area of a cell culture can be modelled by the function , where S(t) is the rate of change in the Surface Area in square millimetres per hour and t is the number of hours where 0 < t < 12

1. State the Domain and Range

1. Determine the model that describes time in terms of surface area

1. Determine the Domain and Range of this new function

Pg. 160 #1a, 2b, 4bc, 7, 9, 10, 11