Coreq Support for Section 4.2

# Topic 1: Determining if the Graph of a Quadratic Function Opens Up or Down

For a quadratic function of the form , the value of determines the direction that the parabola opens.

If , the parabola opens up and has a minimum value at the vertex. If , the parabola opens down and has a maximum value at the vertex.

# Topic 2: Determining Relative Maximum and Relative Minimum Values of a Function

In section 3.2, we learned how to identify relative maximum and minimum values of a function when given its graph.

When a function changes from increasing to decreasing at a point , then is said to have a relative maximum at . The relative maximum value is .

When a function changes from decreasing to increasing at a point , then is said to have a relative minimum at . The relative minimum value is .

# Topic 3: Writing Revenue and Profit Functions

Revenue is defined as the dollar amount received by selling items at a price of dollars per item, that is, .

The Law of Supply and Demand states that as the quantity increases, the price tends to decrease. Likewise, if the quantity decreases, the price tends to increase. Thus, the price is often modeled with a linear function that is called the demand function.

Profit is equal to revenue minus cost. We can say that where represents the quantity of an item.