MATH 156: Precalculus
Fall 2015
Worksheet §3.1: Quadratic Functions and Models

This section is a detailed look at quadratic functions. In particular, given a quadratic function, you want to be able to:

1. put it in standard form
2. quickly sketch the graph using the standard form
3. find the maximum or minimum
4. find the x-intercepts, if any exist

A quadratic function is a polynomial of degree _____. The most common way to see a quadratic function is _____.

A very useful form is the **standard form** of a quadratic which is _____.

Why is this form useful?

Example 1: For the quadratic function $f(x) = 3 - 6x - 4x^2$, (a) express f in standard form, (b) sketch a graph of f, (c) find the maximum or minimum of f (and state which it is), (d) find x-intercepts, if any exists, and (e) state the domain and range.

Example 2: Same directions for $f(x) = \frac{1}{2}x^2 + 2x - 6$.