Math 2240	The Ubiquitous Ski Jump Problem	Project #1

DUE: Monday, September 8^{th} at the **beginning** of class.

You are to design a ski jump with the following specifications:

- The ski jump starts off at a height of 100 feet and finishes at a height of 10 feet.
- From start to finish the ski jump covers a horizontal distance of 120 feet.
- A skier would start off horizontally (the top of the jump has a horizontal tangent) and end with a tangent at a 30° angle from the horizontal.

Please model the ski jump using a cubic polynomial:

$$y = a_3x^3 + a_2x^2 + a_1x + a_0$$

(You need to determine a_0, a_1, a_2, and a_3.)

Your solution should include a detailed explanation of your work, the computations you used, your final answer, and a **computer generated** graph of the ski jump. When stating coefficients of the cubic, please give *exact* values. For example: Don't write $x = 1.414$ if $x = \sqrt{2}$.