Optimization using Ti-84
(Using Ti-84 solving an equation)

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October 28, 2015
1. Using Ti-84 solving an equation

Example 1: Solving $f(x) = 6x^3 - 13x^2 - 99x + 70 = 0$

$-10 < x < 10$ and $-230 < y < 230$
$Y_1 = 6x^3 - 13x^2 - 99x + 70$ for $-10 < x < 10$ and $-230 < y < 230$.

Function $\rightarrow$ Window $\rightarrow$ Graph $\rightarrow$ 2nd/Calc/Zero
The first solution $x = 3.5$. 

Left bound $\rightarrow$ Right bound $\rightarrow$ The first solution $x = 3.5$
The 2nd solution $x = 0.666 = 2/3$
The third solution $x = 5$
2. Optimization using Ti-84 The following function is from a project in the last year.

The Demand Function $D(x)$

$$D(x) = \frac{1263.36}{1 + 0.09e^{0.28x}}$$

The Revenue Function $R(x)$

$$R(x) = xD(x) = \frac{1263.36x}{1 + 0.09e^{0.28x}}$$

Question: Find the price which gives the maximal revenue. $0 < x < 30$

Method: We need to solve the equation $R'(x) = 0$ using Ti-84.
Functions → Window → Zoom 0: ZoomFit
Test value $Y1(2) = 2182.79731$ to make sure your function is correct
2ed/Calc/Zero  $\rightarrow$ Left bound $\rightarrow$ Right bound
2. Optimization using Ti-84 The following function is from a project in the last year.

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The Revenue Function $R(x)$

$$R(x) = xD(x) = \frac{1263.36x}{1 + 0.09e^{0.28x}}$$

Find the price which gives the maximal revenue.

Solution:

$$x = 7.9071917$$