Steps for Newton's Method on the TI-83/84
(Using Ans Button)

1. Enter the formula for $f(x)$ into Y₁.

2. Enter the formula for $f'(x)$ into Y₂.

    You don't want to actually graph the derivative, so turn off this graph by placing your cursor over the "=" and pressing [**ENTER**]. You will see that the "=" is no longer highlighted. When you press [**GRAPH**], it will now only graph Y₁.

3. Look at the graph of $f(x)$ and choose a value for your initial guess.

4. On the Home Screen, enter this number for your initial guess and [**ENTER**].

5. We need to get the formula Ans – Y₁(Ans)/Y₂(Ans) exactly as shown. Notice that this is Newton's

    Formula $x_n\text{-}f(x_n)/f'(x_n)$, where Ans is the last output value that becomes the new input.

    To get the Y₁ and Y₂ you must use the VARS menu: Press [**VARS**], then move over to highlight Y-VARS. Press [**1**] to select Function… and Press [**1**] or [**2**] to paste Y₁ or Y₂ to your home screen.

    Enter the following keys exactly as indicated:

    [**2ⁿᵈ**][**ANS**] – [**VARS**] [**►**] [**1**][**1**] [**(**] [**2ⁿᵈ**][**ANS**] [**)**] [**÷**][**VARS**] [**►**] [**1**][**2**] [**(**] [**2ⁿᵈ**][**ANS**] [**)**]

    Make sure the formula appears as Ans – Y₁(Ans)/Y₂(Ans) on the Home Screen.

6. Press [**ENTER**] repeatedly to execute the formula in step 5 with the updated **Ans**. Continue until the answer has converged to the desired number of decimal places.

[Note: You do not need to re-type Newton's Formula for a new problem. Follow the steps below.]
- Enter the new function and its derivative as Y1 and Y2 (Steps 1-2 above. Also turn off the graph for Y2)
- Clear the home screen
- Enter a new starting value in your calculator. It is now stored as [**Ans**]. (Steps 3-4 above)
- Press [**2ⁿᵈ**] [**Entry**] until you see the formula Ans – Y₁(Ans)/Y₂(Ans) and press [Enter]. (Replaces step 5 above)
- Press [**ENTER**] repeatedly (Step 6 above)

Steps for Newton's Method on the TI-NSpire
(Version 2: *Storing the values in x*)

1. Enter the formula for $f(x)$ into $f_1(x)$

2. Enter the formula for $f'(x)$ into $f_2(x)$.

   You don't need to see the graph of $f'(x)$ and can turn it off if you like.

3. Look at the graph of $f(x)$ and choose a value for your initial guess.

4. On the Home Screen, enter this number for your initial guess and then type [**ctrl**][**sto→**][**x**]. Then press [**enter**].

5. We need to get the formula $x - f_1(x)/f_2(x)$ exactly as shown and store it in x. Notice that this is Newton's Formula x_n-$f(x_n)/f'(x_n)$.

   To get the f_1 and f_2 you must use the VAR menu: Press [**Var**], then select f_1 or f_2 as needed.

   Enter the following keys (Use the right arrow key as necessary to move the cursor):

   [**x**] − [**var**] [**f1**] [**x**] [**÷**] [**var**] [**f2**] [**x**] [**ctrl**][**sto→**][**x**]. Then press [**enter**].

   Make sure the formula appears as x-$f1(x)/f2(x)$ →x on the entry line.

6. Press [**ENTER**] repeatedly to execute the formula in step 5 with the updated **x value**. Continue until the answer has converged to the desired number of decimal places.