Newton's Method
Demonstration Activity

1) Open the Newton's Method Demonstration located at
http://demonstrations.wolfram.com/LearningNewtonsMethod/

2) First get familiar with the various options. Choose a function. Set $n = 0$. Adjust the slider for x_0. Click on $n = 1, 2, 3, \ldots$

3) Choose $f(x) = x^2 - 2$, $x_0 = 6$ and click on $n = 0, ..., 6$.

   a) List the approximations generated by Newton's Method:

   b) What does the root of $f(x)$ appear to be?

   c) What is the exact value of the root? (You should be able to find this by hand.)

4) Choose $f(x) = \cos x$.

   a) Let $x_0 = 1$. How many iterations does it take to get the root to 4 decimal places? List the iterations.

   b) Let $x_0 = 3$. Describe what is happening and why.

   c) Let $x_0 = 3.15$. Describe what is happening and why.

5) Explain in your own words what is being shown by this demonstration of Newton's Method.

6) Explain when Newton's Method might fail.