Worksheet
10/28/2019

Name: _____

1. Suppose we want to compute approximately $\sqrt{3}$ by using secant method for the function $f(x) = x^2 - 3$.
   - Write the iteration formula of secant method.
   - For $x_0 = 1$ and $x_1 = 2$. Draw a picture that illustrates the secant method.
   - With the help of your calculator, find the approximate root after 4 iterations.
   - Fix $x_0 = 1$. Determine the range of values for x_1 so that x_n to converge to $\sqrt{3}$? The same question for $-\sqrt{3}$.

2. We know that 2 is a root of the polynomial $x^2 - 3x + 2$. However, we want to test if fixed point method could give an approximate value for this root.

   - Convert this problem into a problem of finding a fixed-point of some function g.
   - Write the iteration formula of fixed point method.
   - Take $x_0 = 1.8$. Draw a cobweb diagram. Does x_n converge to 2? If so, find x_4.
   - Take $x_0 = 2.2$. Draw a cobweb diagram. Does it converge to 2? If so, find x_4.
   - Find the order of convergence of the fixed point method.