LAS Calculus
Newton's Method
Homework

1. Use the Babylonian method to approximate the following square roots.
   a) Use an initial guess of $x = 2$ and improve it 3 times to approximate $\sqrt{5}$.
   b) Approximate $\sqrt{10}$:
      - Start by finding an integer whose square is close to 10.
      - Use the Babylonian method three times to improve this guess.
2. Use Newton's method to approximate $\sqrt[3]{10}$. (This is a solution of $f(x) = 0$ for $f(x) = x^3 - 10$. Start with an initial approximate of $x = 2$ and use Newton's method three times to improve it.)
3. Use Newton's method to approximate $\sqrt[3]{5}$. (Start with a reasonable initial guess, and improve it three times.)
4. Use Newton's method to approximate a solution of $f(x) = 0$ for $f(x) = x^3 + 5x - 3$. Start with an initial guess of $x = 1$ and improve it twice.
5. Use Newton's method to approximate a solution of $f(x) = 0$ for $f(x) = x^3 - x - 2$. Start with an initial guess of $x = 1$ and improve it twice.