Math 199 CD2: Newton's Method

October 21, 2021

1. Use Newton's Method to find the root of $2x^2 + 5 = e^x$ accurate to six decimal places in the interval $[3, 4]$

2. Approximate $\sqrt{3}$

3. The function $f(x) = x^3 - 3x^2 - 3x + 6$ has a root between 3 and 4 (why?). Using Newton's method to approximate the root upto 2 decimal points

4. Find a root of the function $f(x) = \cos(x) + 2\sin(x) + x^2$, starting $x_0 = 0$

5. Find the root of $e^{\cos(x)}$

6. Explain why Newton's method fails to find the root of $x^{1/3}$ for initial guess $x = 1$