

Math 151A

HW #3, due on Friday, January 26

- Reading: section 2.3.

- Problems:

2.3, #2 Let $f(x) = -x^3 - \cos x$ and $p_0 = -1$. Use Newton's method to find p_2 . Could $p_0 = 0$ be used ?

2.3, #4(a) Let $f(x) = -x^3 - \cos x$. With $p_0 = -1$ and $p_1 = 0$, find p_3 using the Secant method.

2.3, #6(a) Use Newton's method to find solutions accurate to within 10^{-5} for the problem:

$$e^x + 2^{-x} + 2 \cos x - 6 = 0 \quad \text{for } 1 \leq x \leq 2.$$

Repeat the last problem using the Secant method.

2.3, #13 Use Newton's method to approximate, to within 10^{-4} , the value of x that produces the point on the graph of $y = x^2$ that is closest to $(1, 0)$ (hint: minimize $d(x)^2$, where $d(x)$ represents the distance from (x, x^2) to $(1, 0)$).

2.3, #14 Use Newton's method to approximate, to within 10^{-4} , the value of x that produces the point on the graph of $y = \frac{1}{x}$ that is closest to $(2, 1)$.

If needed, codes can be found on the class webpage.