Math 131 - April 6, 2016

Warm-up Problems

1. Let $f(x) = x^3 - 2x - 5$. Find

   (a) $f(0) =$

   (b) $f(3) =$

   What does this mean (if anything) about roots of f?

2. Given the line

   $$y - y_0 = m(x - x_0)$$

   Find a formula for where this line crosses the x-axis.

Lecture Problems

3. Use the formula $x_{n+1} = x_n + \frac{f(x_n)}{f'(x_n)}$ to approximate the roots to the functions. Use the starting x_1 and find x_2, x_3.

   (a) $f(x) = x^2 - 2$, $x_1 = 2$

   (b) $f(x) = \cos x - x$, $x_1 = 1$

   (c) $f(x) = e^x - (x + 2)$, $x_1 = 1$

4. Given the derivative of the functions below, find the function $f(x)$.

   (a) $f'(x) = 2x$. $f(x) =$

   (b) $f'(x) = \sin x$. $f(x) =$

   (c) $f'(x) = e^x$. $f(x) =$

   (d) $f'(x) = \frac{1}{x}$. $f(x) =$

   (e) $f'(x) = \ln x$. $f(x) =$

   (f) $f'(x) = x\cos(x^2)$. $f(x) =$

   (g) $f'(x) = x + 4$. $f(x) =$