Review Homework

Math 116

due Wednesday, December 5th

Exercise 1 **(10 pt)**

Simplify using the laws of logarithm.

$\log_b x\sqrt{x+1}$

Exercise 2 **(10 pt)**

Write as a simple logarithm.

$\frac{1}{3}\log_b(x+2) - \frac{1}{2}\log_b(x+3)$

Exercise 3 **(15 pt)**

Find $f^{-1}(x)$:

$f(x) = -1 + \frac{1}{2}\ln(x-5)$

Exercise 4 **(15 pt)**

If the energy released of one earthquake is 1,000 times that of another, how much larger is the Richter scale reading of the larger than the smaller? (Richter scale reading is given as: $M = \frac{2}{3}\log\frac{E}{E_0}$)

Exercise 5 **(20 pt)**

Solve for x in terms of y.

$y = \frac{e^x + e^{-x}}{2}$

Exercise 6 **(20 pt)**

Solve the following system of equations:

$$\begin{aligned} 3x_1 + 8x_2 - x_3 &= -18 \\ 2x_1 + x_2 + 5x_3 &= 8 \\ 2x_1 + 4x_2 + 2x_3 &= -4 \end{aligned}$$

Exercise 7 **(20 pt)**

Given the matrix A, find A^{-1}. Check by showing $A^{-1}A = I$.

$$\begin{pmatrix} 2 & -1 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & 1 \end{pmatrix}$$