Math 115 HW #2

Due Friday, September 11

Read: Stewart §12.1–12.2

Problems:

1. In the special theory of relativity, the mass of a particle with velocity v is given by

$$m = \frac{m_0}{\sqrt{1 - v^2/c^2}}$$

   where m_0 is the mass of the particle at rest and c is the speed of light. What happens as $v \to c^-$?

2. Evaluate

$$\lim_{t \to 0} \left(\frac{1}{t} - \frac{1}{t^2 + t} \right).$$

3. Evaluate

$$\lim_{x \to \infty} \frac{x}{\sqrt{x^2 + 1}}.$$

Problems from Stewart: From §12.1 do problems 22, 28, 34, 42, 54, 58(b), 60, 62, 70.