Homework Assignment for Week 02

1. Can the following be the definition for $\lim_{x\to c} f(x) \neq L$? Explain.

   For any $\delta > 0$, there exists an $\epsilon_0 > 0$ and an $x_0 \in (c-\delta, c) \cup (c, c+\delta)$ such that $|f(x_0) - L| \geq \epsilon_0$.

2. Section 2.4: Problems 26, 34, 42, 48.

3. Chap 2: Problems 25 (Hint: $1 - \cos x = 2\sin^2 \frac{x}{2}$), 26 on page 121.

4. Section 2.5: problems 64, 67, 77 (Need not graph it).

5. Section 2.6: problems 92, 93, 100 (need not graph it, just find all horizontal, vertical and oblique asymptotes).

6. Read Definition of the limits in p87, p104, p110 and p116. Then verify the following statements using formal definition of limits:

   a.
   $$\lim_{x\to 0^+} \frac{1}{x} = \infty$$

   b.
   $$\lim_{x\to\infty} -x^2 = -\infty$$