1. Problem 64 in Section 2.3 of Stewart

2. Give an example of functions $f,g$ (You may give different examples for each part) such that
   
   - Neither $\lim_{x \to 5} f(x)$ nor $\lim_{x \to 5} g(x)$ exists, but $\lim_{x \to 5}(f(x) + g(x))$ does.
   - Neither $\lim_{x \to 3} f(x)$ nor $\lim_{x \to 3} g(x)$ exists, but $\lim_{x \to 3}(f(x)g(x))$ does.

3. Suppose you start with $P$ dollars. You invest this $P$ dollars at an 5% annual interest rate.

   - Suppose that the interest is compound every $k$ years (Note that $k$ is not necessarily an integer). Write a formula for
     
     \[ P(t) = \text{amount of money you have after } t \text{ years} \]

   - What do you think “continuous compounding” might mean? Write a formula for $P(t)$ if your money is continuously compounded (using things we have learned).

   *Hint: This will involve a limit.*