1. Find the point on the graph of \( y = \sqrt{x} \) which is nearest to the point (4, 0).

2. Two posts, one 12 feet high and the other 28 feet high, stand 30 feet apart. They are to be stayed by two wires, attached to a single stake on the ground and running to the top of each post.  
   (a) Where should the stake be placed so that the least amount of wire is used?
   (b) Can you solve the problem without calculus? (Hint: reflect one of the posts.)

3. Problem 47(a,b,c,e) in Section 4.6 of the book.

4. Compute the following limits:
   (a) \( \lim_{x \to 0} \frac{1 - \cos(2x)}{x^2 - x} \)
   (b) \( \lim_{x \to 0} (1 + 2x)^{5/2} \)
   (c) \( \lim_{x \to 0} \left( \frac{1}{x} - \frac{1}{\sin(2x)} \right) \)
   (d) \( \lim_{x \to 0^+} (e^x - 1) \ln x \)
   (e) \( \lim_{x \to 0} (3^x + 4^x)^{1/x} \)
   (f) \( \lim_{x \to 0} \frac{e^{-1/x^2}}{x} \)

3. P. 47. At noon, ship A was 12 miles due north of ship B. Ship A was sailing south at 12 miles/hour. Ship B was sailing east at 8 miles/hour.
   a. Start counting time with \( t = 0 \) at noon and express the distance \( s \) between the ships as a function of \( t \).
   b. How rapidly was the distance between the ships changing at noon? One hour later?
   c. Did the ships ever sight each other? (visibility = 5 miles)
   d. Find \( \lim_{t \to \infty} ds/dt \). What is its relation to the ships’ individual speeds?