Math 1a. §3.8 Worksheet
Linear Approximations and Differentials

Fall 2005

1. Estimate $\sqrt{101}$ without using your calculator. How does this compare to the answer that you obtain from your calculator.

2. Estimate $\sqrt{98}$ without using your calculator. How does this compare to the answer that you obtain from your calculator.

3. The radius of a circular disk is given as 24 cm with a maximum error in measurement of 0.2 cm.

   (a) Use differentials to estimate the maximum error in the calculated area of the disk.

   (b) What is the relative error?

   (c) What is the percentage error?

4. Use differentials to estimate the amount of paint needed to apply a coat of paint 0.05 cm thick to a hemispherical dome with the diameter of 50 m.