1. The demand function for a desk lamp is given by



where *x* is the quantity demanded (measured in thousands) and *p* is the unit price in dollars.

1. Determine 

b) Interpret the derivative in terms of this problem.

1. What is the rate of change of the unit price when the quantity demanded is 7,500 units (note that *x* is measured in thousands)? What is the unit price at this level of demand?

2. Use the **Chain Rule** to determine the derivatives of the following functions.

a) 

b) 

c) 

3. The population of Americans age 55 and over as a percent of the total population is approximated by the function

 

where *t* is measured in years, with corresponding to the year 2000.

1. Determine (apply the chain rule) and interpret the derivative in terms of this problem.
2. At what rate was the percent of Americans age 55 and over changing at the beginning of 2005?
3. At what rate will the percent of Americans age 55 and over be changing in 2011?