Practice the following problems related to exponential decay models.

The key formula is

$$A(t) = P_0 e^{-rt}$$

36. Present value. Desmond wants to have \$15,000 available in 5 yr to pay for new siding. Interest is 4.3%, compounded continuously. How much money should be invested?

44. Depreciation. The Larsons purchase a motorboat and estimate that its value $V(t)$, in dollars, after t years, is given by

$$V(t) = 30{,}000e^{-0.27t}.$$

a) What did the motorboat cost originally?
b) What is the motorboat's value after 6 yr?
c) Find the rate of change of the motorboat's value after 6 yr, and explain its meaning.

50. Decline in beef consumption. Annual consumption of beef per person was about 64.6 lb in 2000 and about 61.2 lb in 2008. Assuming that $B(t)$, the annual beef consumption t years after 2000, is decreasing according to the exponential decay model:

a) Find the value of k, and write the equation.
b) Estimate the consumption of beef in 2015.
c) In what year (theoretically) will the consumption of beef be 20 lb per person?