More Derivative Function Practice

1. Calculate the derivative of $7x^2$ several ways.
   (a) Use the power rule short cut to calculate $f'(x)$.
   (b) Use different quotients and evaluate the limit to determin $f'(x)$.
   (c) Use your results for $f'(x)$ to calculate $f'(2)$.
   (d) Calculate the slope of a line that goes through $f(x)$ and $x = 2$ and $x = 2.5$.
   (e) Do you expect slope of this line to be larger or smaller than $f'(2)$? Use a graph of $f(x)$ to explain your answer.
2. Let $g(v)$ be the fuel efficiency in mpg of a car traveling at v miles per hour. What is the practical meaning of the statement:

$$g'(55) = -0.54 \text{ ?}$$

3. Let $C(n)$ be the cost of providing a COA education to n students. What is the practical meaning of the following quantities?
   (a) $C(300)$
   (b) $C'(300)$