Exam 2 Review

1. Find the derivative of $f(x) = (x^2 - 5x + 4)e^{-4x}$, and simplify completely.

2. Find the derivative of $f(x) = \dfrac{2x-1}{5x^2+9x}$, and simplify completely.

3. Assume that a demand equation is given by $p = 140 - \frac{1}{80}q$. Find the marginal revenue for the production level $q = 1400$ units.

4. Assume that a demand equation is given by $q = 8000 - 50p$. Find the marginal revenue for the production level $q = 2000$ units.

5. The total cost (in dollars) of producing q graphing calculators is

$$C(q) = 5q^2 - 12q + 180,$$

where $q \geq 0$. Identify the open interval where the average cost, $\overline{C}(q)$, is increasing.