Assignment 4 Supplementary Problems

In Problems 1 - 3, find the marginal cost and the marginal revenue for the given average cost functions and demand equations.

1. $\overline{c} = \dfrac{10}{q} + 5 + e^{-.1q}$

   $p = 100e^{-.01q}$

2. $\overline{c} = \dfrac{100}{q} + \dfrac{50}{\sqrt{q}} + 2$

   $p = \dfrac{100}{\sqrt{q}}$

3. $\overline{c} = \dfrac{500}{q} + .01q + 10$

   $p = \dfrac{100}{q+1}$

4. Suppose that the demand for a monopolist's product is given by $p = \dfrac{200}{q+1}$, where p is the price per unit and q is the number of units, and that the average cost function is given by $\overline{c} = 2 + \dfrac{50}{q}$.

   (a) Find an expression for the profit P as a function of q.

   (b) Find all values of q at which $\dfrac{dP}{dq} = 0$.