Economics 40535: Assignment 3
(due Wednesday, April 9)

Professor Jensen Spring 2014

Assume a consumer's utility function is

$$U(x,y,q) = x^{1/3} y^{2/3} q$$

where x is the quantity of good x consumed, y is the quantity of good y consumed, and $q > 0$ is environmental quality.

Also asume that the prices of goods x and y are $p_x > 0$ and $p_y > 0$, and that the consumer's income is $I > 0$.

1. Derive this consumer's indirect utility function $V(p_x,p_y,I,q)$.

2. Suppose income and environmental quality are initially $I_0 > 0$ and $q_0 > 0$, but a new policy is introduced that would change environmental quality to $q_1 > 0$ (and have no effect on prices).

a. How much income would need to be give to (or taken away) from this consumer to make them indifferent to the new policy?

b. When do you need to give the consumer more income to keep her indifferent?

3. Suppose instead that the consumer's utility function is

$$U(x,y,q) = x^{1/3} y^{2/3} q^2.$$

a. Rework questions 1 and 2 above for this utility function.

b. If your answer to 2a is different for this utility function, explain why.