Problem Set 1  
Due: Friday, September 1st, 2006. 

1. Consider the following utility functions, where $x$ represents power and $y$ represents money. 

(a) $u(x, y) = 10 \ln(x) + y$  
(b) $u(x, y) = 5\sqrt{x} + y$  
(c) $u(x, y) = 4x(20 - x) + y$. 

For each one of them 

(a) calculate and draw its corresponding marginal utility of $x$ (the willingness to pay for power). 
(b) calculate and draw its corresponding demand function for power. 

2. Consider the following demand functions for $x$. 

(a) $x(p) = 20/p$  
(b) $x(p) = 10p^{-2}$  
(c) $x(p) = 20 - p/4$. 

For each one of them 

(a) draw its corresponding demand curve (with $p$ in the vertical axis)  
(b) calculate the change in its corresponding consumer’s surplus when the price of $x$ drops from 3 to 1. Draw.