Homework 4:

Creating Supply and Demand Curves

Professor Schenk

Due: December 13, 2011

1. Presume a firm is manufacturing a good. Below is the firm's production.

| Quantity	Input (workers)	Average Product	Marginal Product
0	0	0	NA
100	5	100/5=20	(100-0)/(5-0)=20
200	8	200/8=25	(200-100)/(8-5)= 33.3
300	9	33.33	100
400	10	40	100
500	12	41.6	50
600	15	40	33.3
700	21	33.33	14.28
800	32	25	9.09

   a. Calculate the Average Product for the Firm at the various levels of output.
   b. Calculate the Marginal Product for the firm at the various levels of output.
   c. Does the firm exhibit increasing, constant, or diminishing marginal product?
   Eventually, decreasing returns, but increasing from 100 to 300 units.

2. Use your answers from above to find the firm's costs. Each worker is paid $200 for labor (e.g., multiply workers by $200).

Quantity	Variable Cost	Fixed Cost	Total Cost	Marginal Cost	AVC		AFC	AC
0	$ 0*200=0	$1,200	1,200	NA	0		0	0
100	$ 1,000	$1,200	2,200	1000/100=10	10		12	24
200	$ 1,600	$1,200	2,800	6	8		6	14
300	$ 1,800	$1,200	3,000	2	6		4	10
400	$ 2,000	$1,200	3,200	2	5		3	8
500	$ 2,400	$1,200	3,600	4	7.2		2.4	9.6
600	$ 3,000	$1,200	4,200	6	5		2	7
700	$ 4,200	$1,200	5,400	12	6		1.72	7.72
800	$ 6,400	$1,200	6,000	6	8		1.5	9.5

   a. Calculate Total Cost.
   b. Calculate Marginal Cost.
   c. Calculate Average Variable Cost, Average Fixed Cost, and Average Total Cost.
   d. Grtaph the firm's AVC, AFC, and AC.
   e. Label the areas (if any) that exhibit decreasing returns to scale. Labels the areas (if any) that exhibit increasing returns to scale.

   Increasing returns from 100 through 400 units of output then decreasing returns.

f. What are the break-even and shut-down prices?
g. Graph the firm's supply curve.

3. Now consider trade-offs for consumers. Below is a graph of a consumer's indifference curves. Assume the consumer has a monthly budget of $60 and the price of other goods are $5.
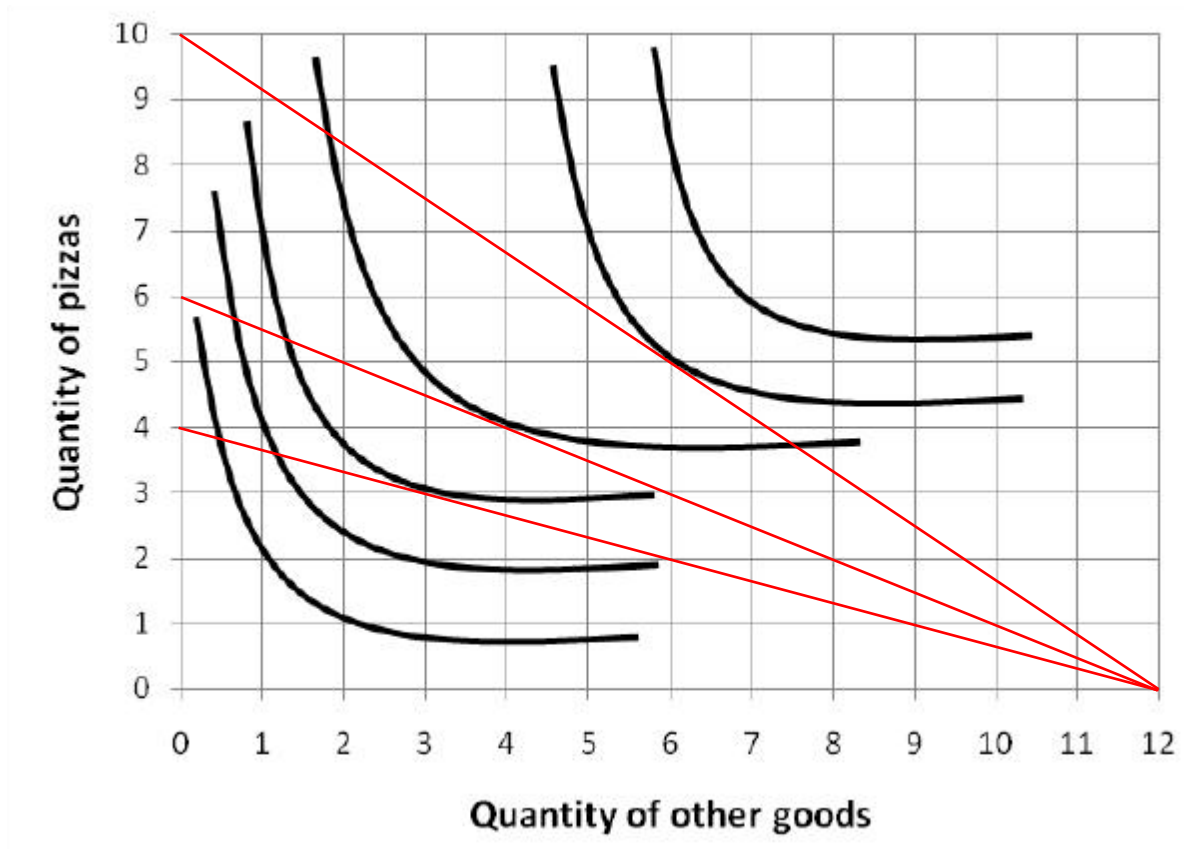
a. Draw the consumer's budget line when the price of pizzas are $15.
b. Draw the consumer's budget line when the price of pizzas are $10.
c. Draw the consumer's budget line when the price of pizzas are $6.
d. Using the points above, draw the consumer's demand curve.

You're done!