1. The following is the market demand function for good X:

Qd =100-2Px +.01M +5Pr where Px = price of good X M = income and Pr=price of a related good

The current values of M and Pr are $40,000 and $100 respectively.

1. Find the direct demand function.

What does the slope coefficient of Px tell you (both qualitatively and quantitatively)?

1. Find the inverse demand function. What is the P axis intercept equal to? What is the slope equal to?
2. Suppose the market supply function for good X is given by:

Qs = -200 +10Px

1. Find the inverse supply function. What is the P axis intercept equal to? What is the slope equal to?
2. Find the equilibrium price and quantity.
3. Suppose the price of the related good falls. What will be the impact on the equilibrium price and quantity? Note: This is a conceptual question where you will need to graph what will happen in the market for good X (no numbers) based on what you know about how goods X and R are related (from above). Graph an initial equilibrium price and quantity, label the curves and respective axes and then depict the new equilibrium price and quantity once Pr falls. Explain in words (2 well chosen sentences should suffice).
4. Suppose you have the following TB and TC functions where X is the choice variable:

TB = 600X – 3X2 and TC = 400X+2X2

1. Find the optimal X that maximizes NB.
2. Graph your MB and MC curves on the same set of axes. Label both your axes appropriately.

Label the optimal value (numerical value) of X that maximizes NB. Label the numerical values of the vertical axis intercepts for TB and TC.

1. Now suppose that TB remains unchanged but TC = 460X +2X2
2. Find the new value of X that optimizes NB.
3. Re-draw your graph including both the original MB and MC curves and original optimal X adding the new MC curve, and the new optimal value of X. What happened to MC (is this an increase or decrease in MC)?
4. In the speeding article we covered in class, what would cause the type of shift of the MC curve you have in part e?

1. Given the following demand curve for a price setting firm:

Qd= 100-20P

1. Solve for the equation for the inverse demand curve.
2. Solve for the equation for the TR curve.
3. Solve for the equation for the MR curve.
4. Solve for the value of Q that maximizes TR
5. Graph the inverse demand curve and marginal revenue curve in one graph.  
   Label your vertical and horizontal axes appropriately. Graph the TR curve directly below the

first graph, labelling your vertical and horizontal axis appropriately.

1. Label the value of Q (from above) that maximizes TR in the above two graphs. What is true about the slope of TR at this value of Q? What is true about MR at this value of Q?
2. Suppose price is currently set at $3. Calculate Ep at this price. If the firm were to increase price above $3 what will happen to TR? Explain why this result occurred. 1-2 well chosen sentences will suffice.
3. Depict in the graph above what has just happened in part g-label your original P,Q, TR and new P,Q, and TR.