MA 110 Dr. Katiraie QUIZ #1 SPRING 2012
SECTION 1.2

NAME ___Solutions_____ SCORE: _____/20
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Let the demand and supply functions be represented by D(p) and S(p), where p is the price in dollars.

D(p) = 4000 – 35p S(p) = 95p

A. Find the price when the demand is 2700. Is there a surplus or a shortage at this price? (3 Points)

Using D(p), 2700 = 4000 – 35 p

-1300 = -35p ➔ p = -1300/-35 = 37.14 ➔ price = $37.14

S(p) = S(37.14) = 95(37.14) = 3528.3

S = 3528.3.5 > D = 2700 when the price, p = $37.14 so there is a surplus.

**In general, you must support surplus with the statement S > D and shortage with the statement S < D.

B. Find the equilibrium price and demand (supply) for the given functions. (3 Points)

Solve D = S 4000 – 35p = 95p

4000 = 130p P = 4000/130 = 30.77 ; therefore p = $30.77

and S(30.77) = 95*30.77 = 2923.15

Then, the **equilibrium price and demand (supply) = ($30.77 , 2923.15)**

C. At what prices is there a surplus? (3 Points)

For prices p > $30.77

D. At what prices is there a shortage? (3 Points)

For prices p < $30.77

** In general, for the Supply/Demand problems that are covered in this course, surplus is when p > equilibrium price and shortage is when p < equilibrium price.

(x_1, y_1)

(x_2, y_2)

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\qquad$ $y = mx + b$ $\qquad$ $y - y_1 = m(x - x_1)$

2) Write the equation of the line through (-15 , -3) with slope m = $\frac{3}{5}$

(4 Points)

Method 1: You can use the point-slope formula as follows:

$y - y_1 = m(x - x_1)$

$y - (-3) = \frac{3}{5}(x - -15)$

$y + 3 = \frac{3}{5}x + 9$

$y = \frac{3}{5}x + 9 - 3$

$y = \frac{3}{5}x + 6$

Method 2: Use the slope-intercept form as follows:

$y = mx + b$

$-3 = \frac{3}{5}(-15) + b$

$-3 = -9 + b$

$-3 + 9 = -9 + b + 9$

$6 = b$

$y = \frac{3}{5}x + 6$

3) Write the equation of the line through (-6 , 2) and (-7 , 5)

(4 Points)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 2}{-7 - -6} = -3$

$y - 2 = -3(x - -6)$

$y - 2 = -3x - 18$

$y = -3x - 16$