

Quiz 1 (Individual) for Statistics 213
Probability and Decision Theory - Spring 1999
Material Covered: Sections 1.4,1.5 of text and notes
For: 29th January

This is a 15 minute quiz, worth 6% and marked out of 6 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an 8½ by 11 inch piece of paper may be used as a reference during this quiz. A calculator and appropriate statistical tables may also be used. No other aids are permitted.

Name (please print): _____ . ID Number: _____
last first

Consider the following two linear equations:

$$\begin{aligned} -4x - 10y + 7 &= 0 \\ 3x - 2y + 1 &= 0 \end{aligned}$$

(a) [2] Solve this system for x and y , or, in other words, find where these two equations intersect:

(b) [1] Draw a graph and sketch the two equations on this graph:

(c) [3] Suppose this system of linear equations represented a market equilibrium analysis, where y represented the unit price, p .

(i) The equation $-4x - 10y + 7 = 0$ would represent the (circle one) **demand equation** / **supply equation**

because: _____.

(ii) The equation $3x - 2y + 1 = 0$ would represent the (circle one) **demand equation** / **supply equation**

because: _____.

(iii) The market equilibrium is given by: _____.

2. Consider the following 2×2 system of linear equations:

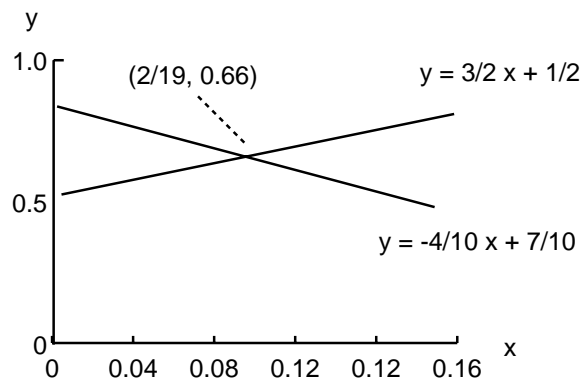
$$\begin{aligned} -4x - 10y + 7 &= 0 \\ 3x - 2y + 1 &= 0 \end{aligned}$$

(a) Solve this system for x and y , or, in other words, find where these two equations intersect: Since

$$\begin{aligned} y &= -\frac{4}{10}x + \frac{7}{10} \\ y &= \frac{3}{2}x + \frac{1}{2} \end{aligned}$$

or $-\frac{4}{10}x + \frac{7}{10} = \frac{3}{2}x + \frac{1}{2}$, solving, $x = \frac{2}{19}$ and $y \approx 0.66$.

(b) Draw a graph and sketch the two equations on this graph:



(c) Suppose this system of linear equations represented a market equilibrium analysis, where y represents the unit price, p .

- (i) The equation $-4x - 10y + 7 = 0$ would represent the (circle one) **demand equation** / **supply equation** because: **the slope of this line is negative**.
- (ii) The equation $3x - 2y + 1 = 0$ would represent the (circle one) **demand equation** / **supply equation** because: **the slope of this line is positive**.
- (iii) The market equilibrium would be given by: $(\frac{2}{19} \text{ units}, \$0.66)$.