

Quiz 6

Math 124

March 13, 2009

NAME:

KEY

1. For the system of linear equations given by

$$L_1(x) = m_1x + b_1$$

$$L_2(x) = m_2x + b_2$$

to have a unique solution, what must be true?

$$m_1 \neq m_2$$

2. Find the solution to the system of linear equations given by

$$y = 4x - 3;$$

$$y = -5x + 8.$$

$$4x - 3 = -5x + 8$$

$$9x = 11$$

$$x = \frac{11}{9}$$

$$y = 4\left(\frac{11}{9}\right) - 3 = \frac{44}{9} - \frac{27}{9} = \frac{17}{9}$$

$$\left(\frac{11}{9}, \frac{17}{9}\right)$$

3. You decide to start a lemonade stand. Building the stand costs \$50, and each glass of lemonade costs \$0.25 to produce.

(a) What is the linear cost equation for your business?

$$C(x) = 50 + .25x$$

(b) If you sell each cup of lemonade for \$0.75 what is the linear revenue equation for your business?

$$R(x) = .75x$$

(c) You are hoping to buy a \$300 X-box with your profits. How many glasses of lemonade do you have to sell?

$$\begin{aligned} P(x) &= R(x) - C(x) = .75x - (50 + .25x) \\ &= .5x - 50 \end{aligned}$$

$$300 = .5x - 50$$

$$350 = .5x$$

$$700 = x$$

700 glasses