MATH 1712 - SPRING 2013
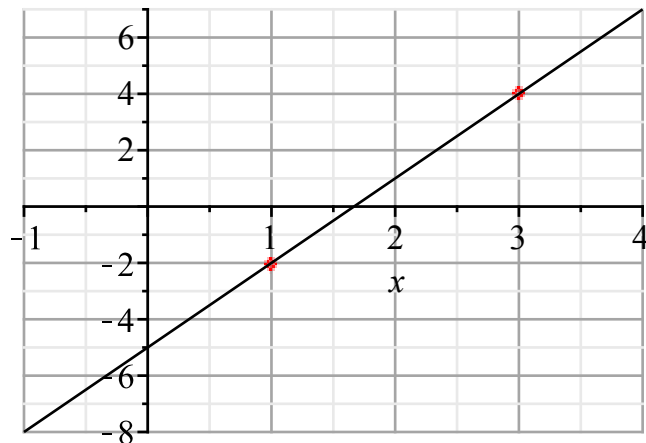## QUIZ 1 - SHOW YOUR WORK

NAME: _____   TA: _____

1. (10 points) a. Plot the points $P(1,-2)$ & $Q(3,4)$ on the axes below. b. Find the equation of the line that goes through these two points (make sure to show your work). c. Sketch the graph of the line from part b on the axes.

b. (6 points) $m = slope = \dfrac{4+2}{3-1} = 3 \Rightarrow y+2 = 3(x-1) = 3x-3 \Rightarrow \boldsymbol{y = 3x - 5}$

a & c. (4 points)

2. (10 points) The XYZ company makes and sells calculators. Let x = # of calculators made and sold. The cost and revenue funtions for the calculators are:

$$Cost = C(x) = 20\,x + 100000 \quad \& \quad Revenue = R(x) = 45\,x$$

a. Graph the cost and revenue functions on the axes below. Label the graphs C & R.

b. Find the number of calculator the company needs to sell in order to break-even (make sure to show your work).

a. (4 points)
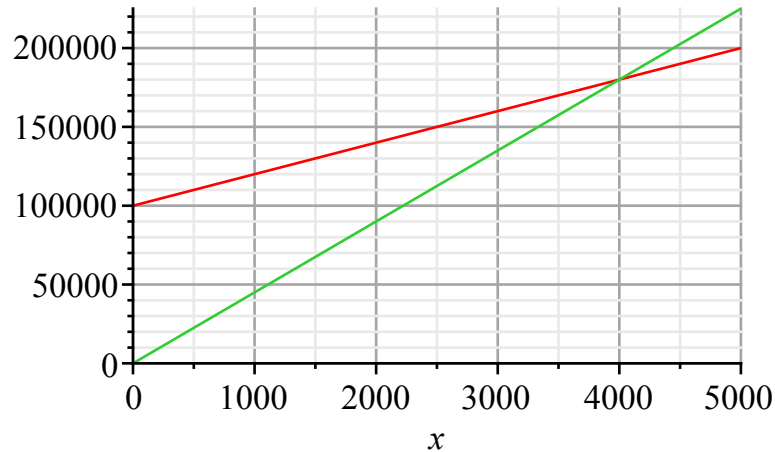
b. (6 points) Break-even means that $C(x) = R(x)$. So solve the equation:

$$20\,x + 100000 = 45\,x \;\Rightarrow\; 100000 = 25\,x \Rightarrow x = \frac{100000}{25} = 4000 \text{ calculators.}$$

3. (10 points) The average price of a movie ticket (in dollars) is shown in the table below:
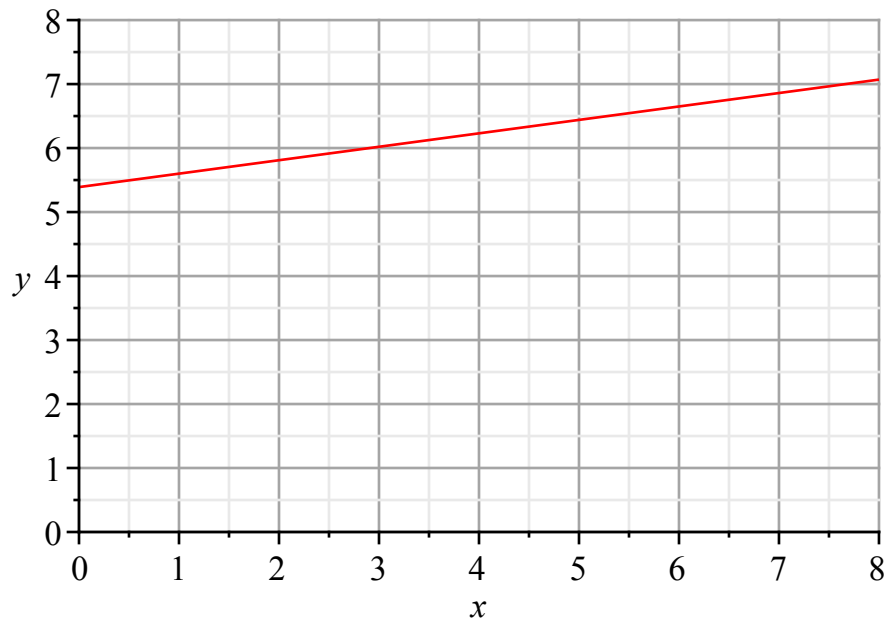
year:	2001	2002	2003,	2004,	2005,	2006,	2007,	2008
avg ticket price:	5.66,	5.81,	6.03,	6.21,	6.41,	6.55,	6.88,	7.18

Let $x = year$ with $x = 1$ corresponding to the year 2001

a. (5 points) Use your calculator to find the best fit linear function for this data; round to 2 decimal places. Then graph the line.

$y = 0.21\,x + 5.39$

b. (5 points) Use the best fit line to determine the year when the average price of a movie ticket is $7.91. Round to the nearest yaer. (make sure to show your work).

Solve for x : $7.91 = 0.21\,x + 5.39 \Rightarrow x = \dfrac{7.91 - 5.39}{0.21} = 12 \Rightarrow year = 2012$