Math 371 DAY 1 EXERCISES **Winter 2016**

1. The Acme Company makes Widgets. Every month they have fixed costs of $8000, and the additional cost of producing a single Widget is $2.37.

   (a) What is their cost for a month in which they produce 5,700 Widgets?

   (b) Write an equation for the monthly cost C as a function of the number x of Widgets produced. This means write an equation of the form $C = \textit{math stuff containing } x$.

   (c) Test your equation from (b) by using it to find the cost for a month in which Acme produces 5,700 Widgets. If it doesn't match your answer to (a), figure out what is wrong and fix it.

   (d) Sketch the graph of your equation, for production from zero to 10,000 Widgets. Put an appropriate scale on your graph and label the each axis with its variable and the units for that variable.

2. Acme sells each Widget for \$4.59.

(a) Acme's **revenue** is the amount of money they bring in from sales. Write an equation for the monthly revenue R as a function of the number x of Widgets made and sold.

(b) Graph the revenue function for sales up to 10,000 Widgets. As before, label each axis.

(c) Sketch what the graph should look like if we were to graph both cost and revenue on the same graph.

(d) Determine the **break even point**, the number of Widgets that must be produced and sold for the revenue to equal (or slightly exceed) the cost.

(e) Write a sentence that gives the significance of the break even point.

(f) In your college algebra class you learned about various kinds of functions. What kind of function are both the cost function and the revenue function?