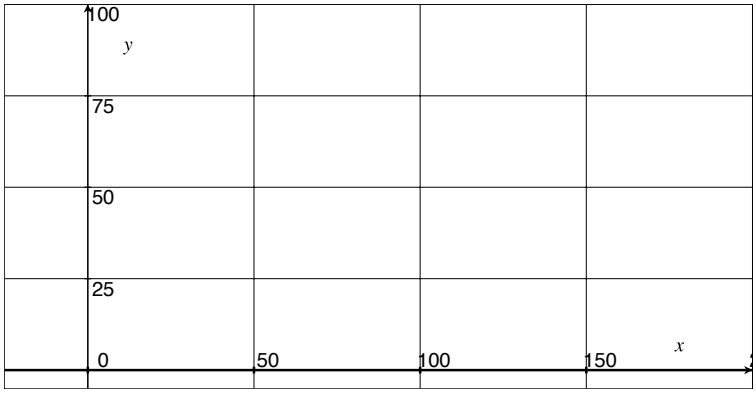
First Applications

Get into groups of two or three people and work on the front of this worksheet. *Do not* start on the back side yet.

1. The market price for widgets is \$.50.

   (a) Draw the revenue function for a company selling widgets.



   (b) Find the revenue function (R) for a company selling q widgets.

   (c) Estimate the marginal revenue at the 101^{st} widget.

   (d) Use (b) to find $R'(100)$ algebraically.

   (e) Copy the cost function presented in class onto the graph on the front page. What number of widgets will give the company a profit?

   (f) What amount of widgets sold will maximize the company's profit?

Do not start on this until the lecture on 2.5 is over. The following problems are meant to give you some practice over the material from §2.5 and all of chapter two since the exam is next Tuesday.

2. An industrial production process costs $C(q)$ million dollars to produce q million units; these units then sell for $R(q)$ million dollars. If $C(2.1) = 5.1$, $R(2.1) = 6.9$, $MC(2.1) = 0.6$, and $MR(2.1) = 0.7$, find the following:

   (a) The profit earned by producing 2.1 million units.

   (b) Should the company increase or decrease production to maximize profit?

   (c) The approximate change in revenue if production increases from 2.1 to 2.14 million units.

   (d) The approximate change in profit if production increases from 2.1 to 2.14 million units.

3. Some good practice problems to help prep you for the exam:

   (a) Review on page 130: #1,2,7-12, 19, 21,26

   (b) If $f(x) = 3x^2 - x$, find $f(-2)$ algebraically.

   (c) If $g(x) = \frac{1}{x}$, find $g(x)$ algebraically.