Quiz 2

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

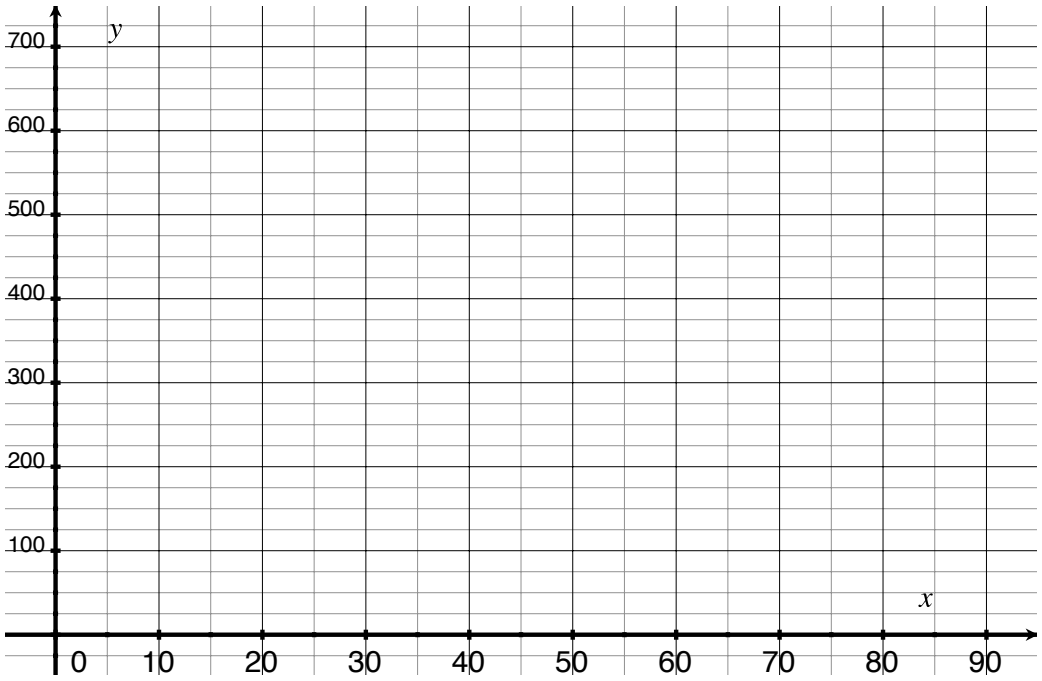
1. In a certain state the maximum speed permitted on freeways is 65 mi/h and the minimum is 40. The fine F for violating these limits is \$15 for every mile above the maximum or below the minimum.

   (a) [1] (§2.1 #69b) Find $F(30)$.

   (b) [2] (§2.1 #69b) Complete the expressions in the following piecewise defined function, where x is the speed at which you are driving.

   $$F(x) = \begin{cases} & \text{if } 0 \le x < 40 \\ & \text{if } 40 \le x \le 65 \\ & \text{if } 65 < x \end{cases}$$

   (c) [2] (§2.2 #43) Sketch the graph of the piecewise defined function F you described above in (b).



2. [3] Let $f(x) = \frac{1}{x}$.

   (a) [1] (§2.7 #1) Find $f + f$ and its domain.

   (b) [1] (§2.7 #20) Find $(f \circ f)(3)$.

   (c) [1] (§2.7 #45) Find a function m so that $(f \circ m)(x) = \dfrac{1}{2x+5}$.

   (d) [2] (§2.4 #29) Write the equation for the final transformed graph of g if the graph of g looks exactly like the graph of f but shifted 3 units to the left and stretched vertically by a factor of 5.