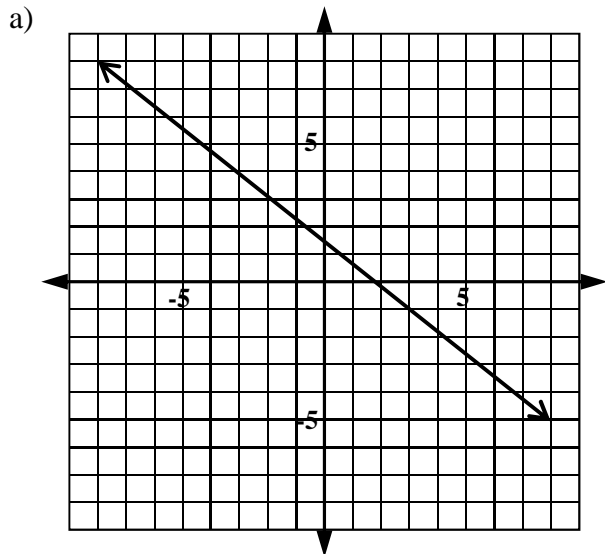


Worksheet #2 on Functions (8.1 etc.)

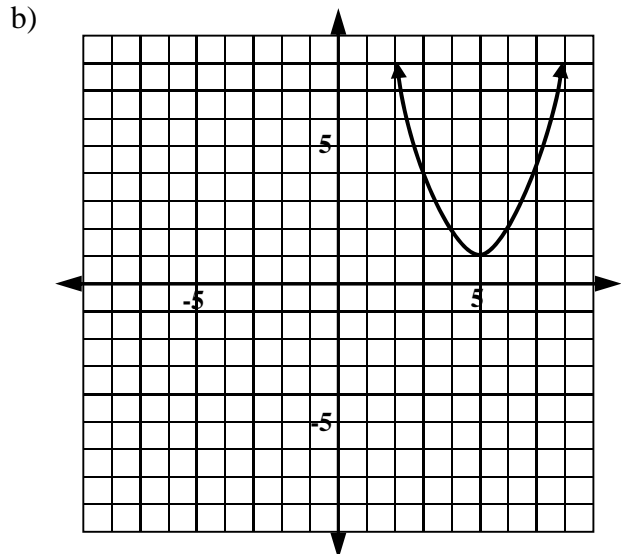
Part I – Identifying domains and ranges of various functions

1. Determine the domain and range of each of the following functions. Write your answers using interval notation.



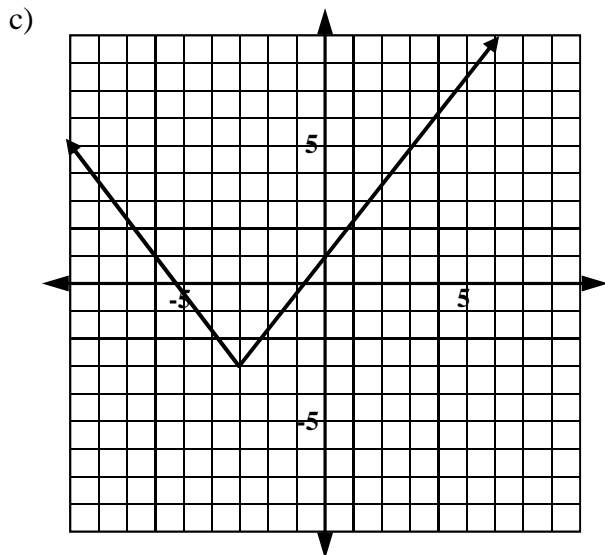
Domain:

Range:



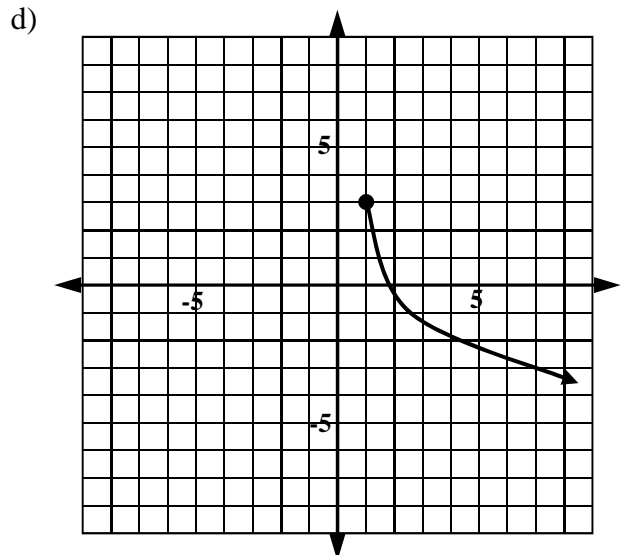
Domain:

Range:



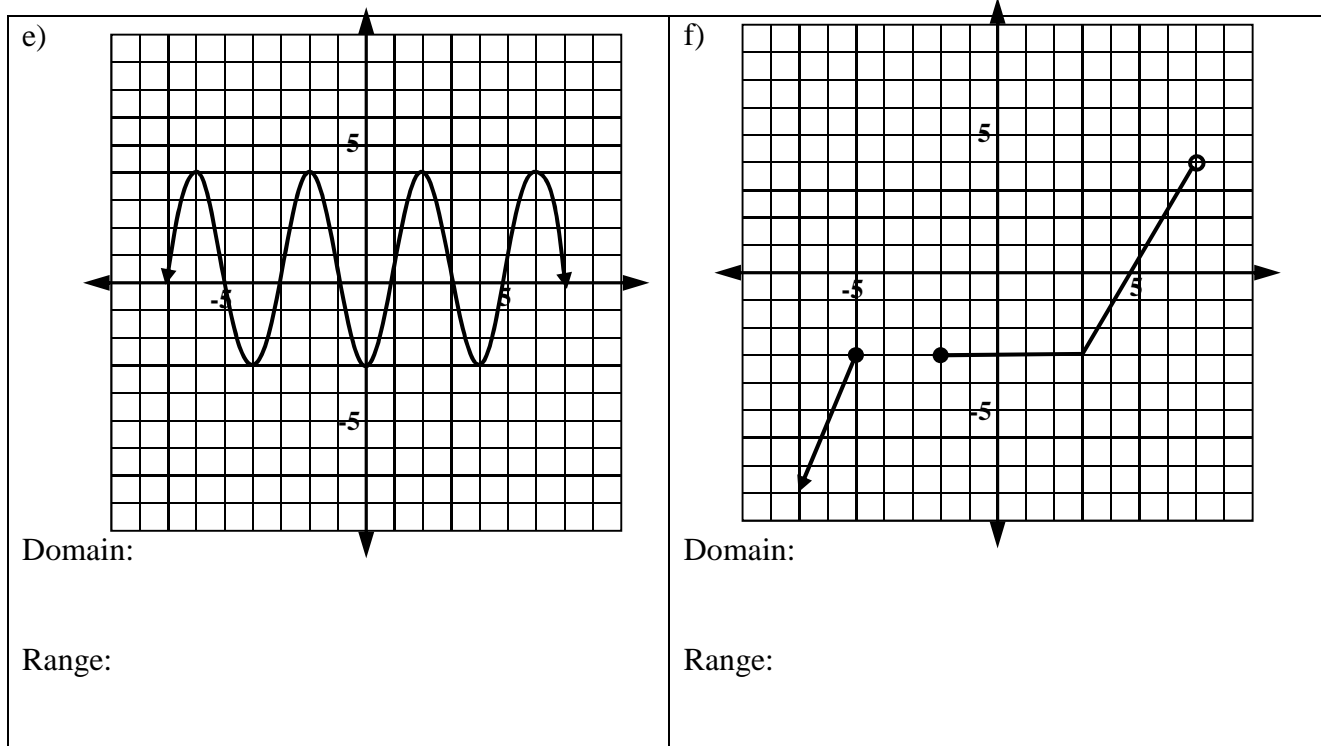
Domain:

Range:



Domain:

Range:



2. Determine the domain and range of functions given in tables, graphs, and symbols to evaluate the given functions.

Tables	Graphs	Symbols												
<p>a)</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #d3d3d3;"> <th style="padding: 2px 5px;"><i>h</i></th> <th style="padding: 2px 5px;"><i>W</i></th> </tr> </thead> <tbody> <tr><td style="padding: 2px 5px;">37</td><td style="padding: 2px 5px;">592</td></tr> <tr><td style="padding: 2px 5px;">42</td><td style="padding: 2px 5px;">672</td></tr> <tr><td style="padding: 2px 5px;">37</td><td style="padding: 2px 5px;">592</td></tr> <tr><td style="padding: 2px 5px;">35</td><td style="padding: 2px 5px;">560</td></tr> <tr><td style="padding: 2px 5px;">48</td><td style="padding: 2px 5px;">768</td></tr> </tbody> </table> <p>For the function <math>W(h)</math>, use set notation to list its</p> <p>Domain:</p> <p>Range:</p>	<i>h</i>	<i>W</i>	37	592	42	672	37	592	35	560	48	768	<p>b)</p> <p>For the function <math>f(x)</math> shown above, use interval notation to describe its</p> <p>Domain:</p> <p>Range:</p>	<p>c) For the function</p> $r(x) = \frac{8}{x(x-3)}$ <p>use interval notation to describe its</p> <p>Domain:</p> <p>Range:</p>
<i>h</i>	<i>W</i>													
37	592													
42	672													
37	592													
35	560													
48	768													

3. Use your calculator to create graphs of the following functions, and use the “Trace” feature to place a few of your points accurately.

<p>g) <math>g(x) = \frac{3}{2x-9}</math></p>          <p>Domain:</p> <p>Range:</p> <p>How is the domain revealed in this formula?</p>	<p>h) <math>h(x) = -2\sqrt{x+6} + 1</math></p>          <p>Domain:</p> <p>Range:</p> <p>How is the domain revealed in this formula?</p>
<p>i) <math>K(x) = 0.5x^2 + 2x - 6</math></p>          <p>Domain:</p> <p>Range:</p> <p>How is the domain revealed in this formula?</p>	

Side note: What is different about the statements  $K(4)$  and  $K(x) = 4$ ? How does this change what you do to calculate them from the graph?

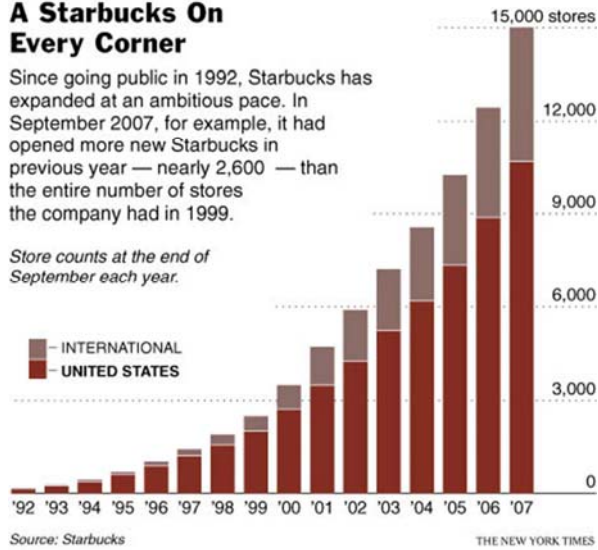
4. Estimate the domain and range for the following real-world data.

j)

### A Starbucks On Every Corner

Since going public in 1992, Starbucks has expanded at an ambitious pace. In September 2007, for example, it had opened more new Starbucks in previous year — nearly 2,600 — than the entire number of stores the company had in 1999.

Store counts at the end of September each year.



Source: [http://www.nytimes.com/imagepages/2008/01/30/business/30SBUX\\_GRAPHIC.html](http://www.nytimes.com/imagepages/2008/01/30/business/30SBUX_GRAPHIC.html)

Domain:

Range:

k) Average monthly precipitation (in inches) for Federal Way.



Source:

<http://www.weather.com/outlook/travel/vacationplanner/wxclimatology/monthly/98003>

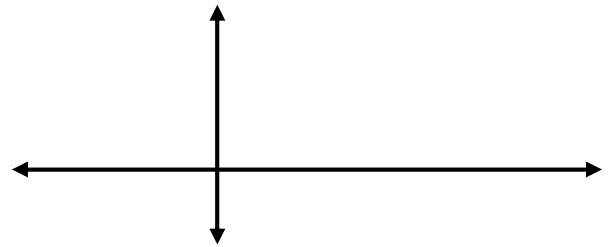
Domain:

Range:

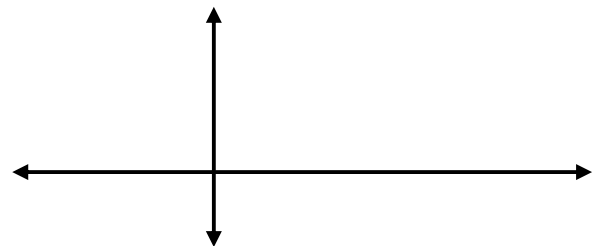
## Part II – Translating relationships to graphs and formulas

2. For each of the following stories, create a graph that shows how the quantities are related or vary. Don't worry about exact numbers – focus on whether things grow, shrink, are zero, big, etc.

a) The amount of gas in your car as you drive from the Seattle area to Spokane. Assume you start with half a tank of gas, drive until you're nearly empty, then fill the tank and continue on to Spokane. Let  $G$  be the amount of gas and  $m$  the number of miles you travel. (Think of  $G$  as a function of  $m$ .)



b) Your distance from home during a day in which you go to school and work (or some other location). Let  $D$  be your distance from home and  $t$  the time of day.



3. For each of the following stories, create a formula that shows how the quantities are related or vary.
- a) Seattle's Yellow Cab taxi company charges \$2.50 to pick you up ("meter drop"), and 50¢ for every fifth of a mile traveled. Write a formula for computing the total charge,  $C$ , based on the number of "fifth miles",  $n$ .