Due 9/10/07

OK—I am going to show you how to do the graph straightening, yes, here in your homework. So, if you follow along EX-ACTLY, I bet you will understand. BUT YOU MUST DO ALL OF THIS ON YOUR OWN. If you copy, you learn nothing.

1) **Function: $y = x^2$.**

A) Fill in the following table, remembering that the y values are the square of the x values.

x	y
1	
2	
3	
4	
5	

B) Graph the function (the table values) below. Make your x scale go by 1's (1,2,3…) and y by 5's (5,10,15…).
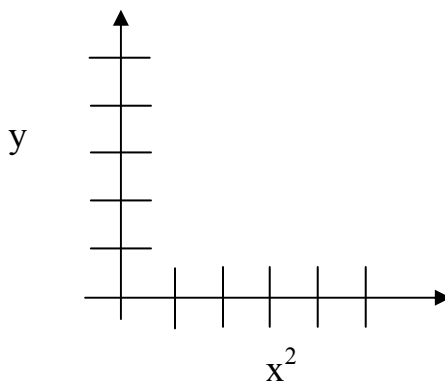
y

x
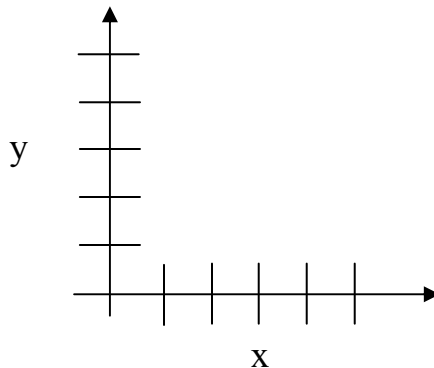
The graph should be the right side of a parabola: the right side of a "U".

C) Fill in the following table. Still, $y = x^2$. Use the same values of x as above.

x^2	y

D) Graph the table at the left below (y vs. x^2). Make both scales go 5's.

y

x^2

*The graph at the right should now be straight.*

Why do we care about a straight line anyway? Because you can put it into the form of the linear equation: $y = mx + b$, where m is the slope and b is the y-intercept. Again, why? Because in an experiment (as you will do a couple of times this year) if you can make a straight line, then you can find the slope and the slope tells use "stuff". This second graph 1D) would have the form of: $y = mx^2 + b$.

2) **Function: $y = 1/x$**

A) Fill in the following table, with $y = 1/x$.

x	y
1	
2	
3	
4	
5	

B) Graph the table below (y vs. x). Have the x scale go up by 1. The y scale is given.
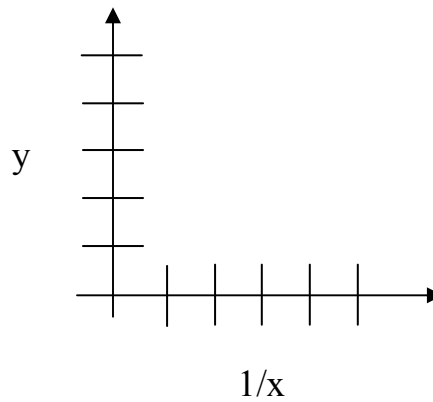
y

1
.8
.6
.4
.2

x
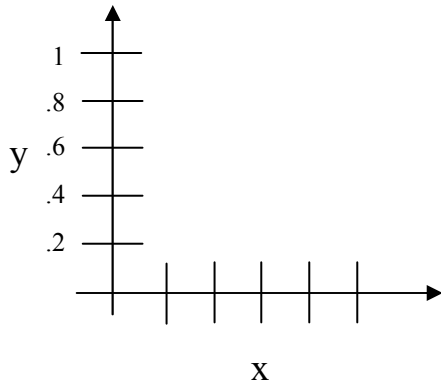
The graph should be of a curve with the opening pointing up and to the right.

C) Fill in the following table:
Remember to find 1/x use x from before
For y, use the same values as before.

1/x	y

D) Graph the table below.
Use the same scale for y and x as the previous y axis.

y

1/x

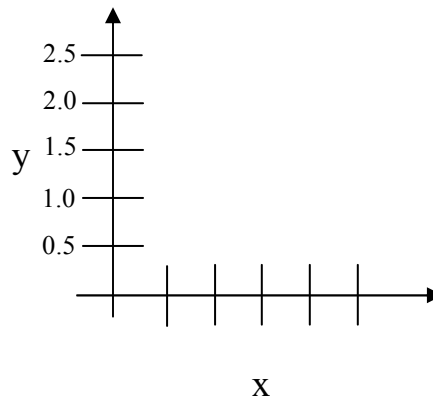*Again, the graph should now be straight.*

3) **Function:** $y = \sqrt{x}$

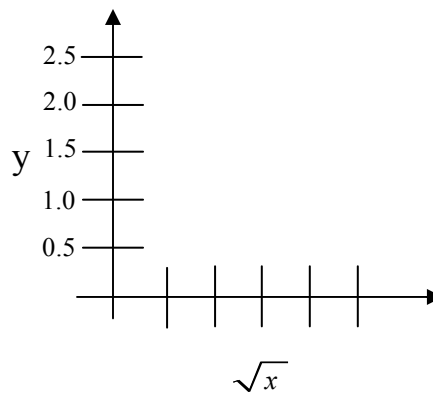A) Fill in the following table,
with $y = \sqrt{x}$.

x	y
1	
2	
3	
4	
5	

B) Graph the table below (y vs. x). Have the x scale go up by 1.
The y scale is given.

y

2.5
2.0
1.5
1.0
0.5

x

C) Fill in the following table as before.

$\sqrt{x}$	y

D) And, last time, graph the data. Duplicate the
y scale on the x-axis.

y

2.5
2.0
1.5
1.0
0.5

$\sqrt{x}$

And, as you would expect, the graph is now straight.

Notice: if you graph y vs. x, the graphs have different shapes. When you graph y vs. the function (x^2, 1/x, etc.) you straighten the graph. You MUST be able to recognize these above shapes and be able to straighten them for labs we will do in the future (and, of course, for the test).