

# Math 101, Littlefield

## Homework: Graphing, Interpreting Curves and Trendlines

This homework uses the data in Angel, Excel for Algebra, Lesson 6 (Basic Graphing).

For each sheet in the workbook, use Excel graphs to answer the following questions:

### Mutual Funds Ownership

1. Over what period did ownership rise at a roughly constant rate?
2. In what year did ownership “level off”?
3. From 1980 through 2000, on average, how much increase per year do we see in the data labeled “Percent of Households”? (Even though this is economic data, you should use a linear trendline in this case. It’s a better fit to the data than an exponential trendline would be.)

### Stock Market Investment

4. During what period did the stock market investment exhibit no real growth for over 15 years?
5. Considering only the period 1960-1985, what was the average annual growth, expressed as % per year? (You’ll need to make a separate graph containing just the data for 1960 through 1985. Add an exponential trendline and show its equation on the graph. Then look at the exponent in the regression equation, and plug it into a formula in any spare cell of the spreadsheet. If the equation says  $e^{0.0123}$ , then the formula =EXP(0.0123)-1 gives the annual growth, about 0.012376 = 1.2376% per year in that case.)

### Anscombe’s Quartet

6. Which data set is linear except for one point that clearly does not fit the pattern of the others?
7. Which data set consists of points that are uniformly scattered around a straight line? What is the equation of that line?
8. Which data set represents a smooth curve? What is the equation of that curve? (Hint: try a Polynomial trendline, Order=2.)
9. Which dataset contains only two distinct values for x?

### Common Functions

The graph of each function can be made into a straight line by proper choice of axes: linear X / linear Y, linear X / logarithmic Y, or logarithmic X / logarithmic Y.

10. Which choice of axes makes the proportional function look straight?
11. Which choice of axes makes the power function look straight?
12. Which choice of axes makes the exponential function look straight?
13. Which choice of axes makes the linear function look straight?