

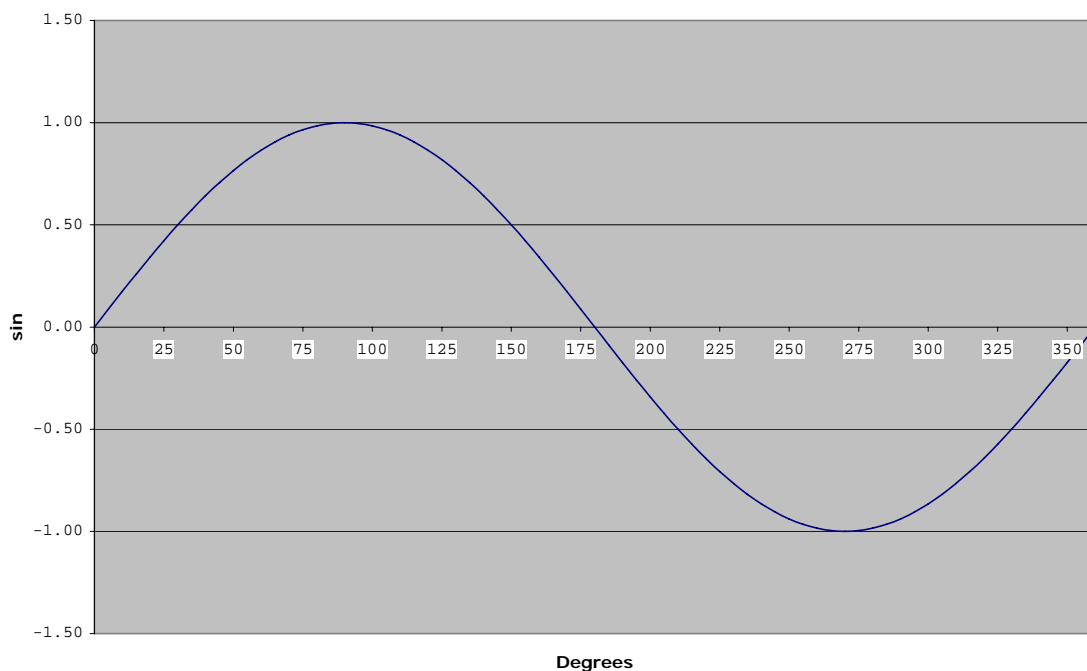
IFS 104 Homework #6

Chapter 6 and XY Scatter charts

Save all your files in the `homework06` folder on your k: drive. Worth 3 points.

1. **Trig functions** - In this exercise, we're going to learn a couple of the Trigonometry (trig) functions in Excel: sine and cosine. You can find them using the `Insert/Function` menu.
 - a) Create a new worksheet that shows the sine and cosine values for values of 0 degrees to 360 degrees, by 5 degree increments. To use the trig functions, you'll have to convert your degrees into what are called "radians". Find a function in Excel to help you do this.
 - b) Once you have your degrees, radians, and their corresponding sin and cos values, then please format your worksheet. Use `Courier New` font for your numbers and `Verdana` for everything else. For radians, sine and cosine, format your numbers so that they use scientific notation with two decimal places... you'll see this option in `Format/Cells`.
 - c) Create two charts: one for sine and one for cosine. Use the `XY Scatter` chart again. There's mine below, if that helps. Place each chart on a separate sheet with a descriptive title and chart "tabbie" name.

The sin Function



2. **Chapter 6** - Complete Cases & Places 2 on page 463. This is a template/3-D reference question. Please:

a) Complete your template first and save it to file: `tennis_template.xls`

b) Then, complete your workbook for the entire problem. In addition to the book's instructions, please do two additional things for me: 1) Create a fun, cool WordArt title for your summary sheet, and 2) add comments to a couple cells in the summary sheet. Save this solution to file: `tennis.xls`

3. **Polar Rose** – The last homework problem... sigh. Let's have fun with it.

a) Add a constants/assumptions table to the right (column J?) with the following values: $K=4$, $Cycles=1$, $Steps=200$, and Step size= the formula below. Assign names to these four values, and use them in the formula for Step size.

$$=2*360*Cycles/Steps$$

b) OK, for column A-E:

- Num – make this a series from 0 to 200, by 1's. That's right, 200 rows.
- Degrees – enter the formula: $=-360*Cycles+(Step_size*A6)$ and copy it down from Num=0 to Num=200.
- Theta – use the RADIANS function to convert the degrees amount in each row into radians.
- r – use the COS function... take the cosine of theta * K from the constants table we setup. Copy it down.
- x – it's equal to $r*\cos(\theta)$, for each row's r and theta value. Copy it down.
- Y – it's equal to $r*\sin(\theta)$, for each row again. Copy.

c) Format everything up.

d) Select your x and y column data and create an XY Scatter chart. The range on the X and Y axis should each be [-1,1]. The Polar Roses look better if your chart is square... don't put it on a separate sheet, so you can resize it. Once you're setup, you might also want to remove the X/Y axes altogether. Right click until you find it.

e) Good luck. "Polar Rose" is fun usage of the polar coordinates we learned in geometry (cough). Here are a couple Wikipedia articles on the topic: [Polar coordinates](#), [Polar Rose](#). If you're correctly setup, play with your constants.

- Cycles=4, $K=2/3$
- Cycles=4, $K=\pi$
- Even better ideas at: mathworld.wolfram.com/Rose.html