A TREASURE MAP - AN EXERCISE IN VECTORS

You and your friends are searching for a lost treasure that is located somewhere in the United States. Instead of a traditional treasure map, you have gained access to a file which contains a list of vectors.(download here) You suspect that the location of the treasure can be found by adding up all of the vectors. Each line in the file contains two numbers. The first number is the magnitude of the vector (in miles) and the second number is the angle that the vector points in a cartesian coordinate system (in degrees). **Use python** to find what state the treasure is located in. Your starting point is Rexburg. Here are some tips/hints that may help you.

1. For help with reading in the data file (don't copy it over by hand) read section 8.1 in the python book. You'll want to use numpy's `loadtxt` command.

2. The first number in each line is the magnitude (length) of the displacement vector (in miles) and the second number is the angle (in **degrees**) that this displacement vector makes in a cartesian coordinate system . You'll want to convert each vector into component form. If you need to use `sin` or `cos`, import them from `numpy`. (see section 5.1 in the python book)

3. When using trig functions in python, the angle is always assumed to be in radians, so make sure you convert correctly.

4. Although you don't have to, you can do this problem without using loops. You'll have to read the section on multi-dimensional slicing in section 5.4 of the python book. My code for solving this problem was 4 lines long (excluding import and print statements)

5. There is a tool in google maps that will help you find the state once you have the displacement vector. Follow the steps below to use it

   a) Right click on Rexburg and click `measure distance`

   b) Left click somewhere else on the map

   c) Drag the second point until it approximately forms the vector that you found.