Worksheet 2

Math 202

Monday, April 8, 2024

Write down your group members' names and email addresses. What city in Europe, Asia, or East Africa would they love to visit?

Tie a string to a pushpin and stick it in Eugene on your squeezy globe. Put another pin in the city that you told your colleagues about, and pull the string taut between the two pins. Observe that your string does not pass over the middle of the Atlantic or Pacific Ocean.

Suppose you knew the distance between your cities "as the mole digs," in a straight line through the interior of the earth. Call that distance D, and call the radius of the earth R, which we're approximating as 4,000 mi or 6,400 km. Can you find the distance between your cities as the crow flies, along the great circle that you made out of string, in terms of D and R?

Given two points (x, y, z) and (u, v, w) in 3-dimensional space, what is the straight-line distance between them? (Warm up with two points (x, y) and (u, v) in the plane. If you've seen this before, now is a good time to discuss any lingering questions you might have about it.) Can you simplify your answer if both points lie at the same distance R from the origin?

Next week we'll combine these two calculations, talk about latitude and longitude, and work toward finding some actual distances between cities.