FRS 157: PROBLEM SET 1

DUE MONDAY SEPTEMBER 19

Reading: Whittlesey, Chapter 2.5, 2.6 and 2.8. Linton, pp. 1–10.

Problem 1: Whittlesey, p.33: Exercises 1, 6

Problem 2: Find the polar and latitude and longitude coordinates for the following points on the sphere of radius 1:

(a) $(1, 0, 0)$

(b) $(0, 1, 0)$

(c) $(0, 0, 1)$

(d) $(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0)$

(e) $(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}})$

Problem 3: If a great circle A on the sphere of radius 1 meets the equator at the point $(1, 0, 0)$ at an angle θ, find the other point on A that meets the equator. Find the two points on A that are farthest from the equator.