

Department of Mathematics
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Math 355 Project 1 (Extra Credit)
Due February 16, 2007

Consider the unit sphere centered at the origin in the xyz -plane. We know $N = (0, 0, 1)$ is on the surface of the sphere and let $Q = (x_0, y_0, 0)$ be a point of xy -plane. Draw a line from N to Q . The line intersects the unit sphere at a point $P = (u, v, w)$.

- a. Find the coordinates of P in terms of x_0 and y_0 .
- b. Show that there is a bijective map from the points on the xy plane to points of the unit sphere except N .
- c. Find the image of the line $x - y = 2$ on the unit sphere under the bijection found in part (b).