MATH 223 Fall 2023

Assignment 8

Due: Friday, September 29

Reading

Read carefully Sections 3.5 "Applications" in our text *Multivariable Calculus: A Linear Algebra Based Approach.*

Writing

Write out careful and complete solutions of Exercises 34, 36, 38, 39, 40, and 41 of Chapter 3, which also appear below.

34. Show that one parametrization of the plane $x + 3y + 5z = 7$ is $x = s, z = t, y = \frac{7}{3} - \frac{s}{3} - 5\frac{t}{3}$

35. (omit) Find a parametrization for the plane $x + 3y + 5z = 7$ where $x = s, y = t$.

36. Find a parametrization for the plane $x+3y+5z = 7$ where $y = s, z = t$.

37. (omit) Find a parametrization for the portion of the plane $x+3y+5z = 7$ lying in the first octant (where $x \geq 0, y \geq 0, z \geq 0$).

38. Show that $x = 6\cos s, y = 6\sin s, z = t$ for $0 \leq s \leq 2\pi, -1 \leq t \leq 7$ is a parametrization of the cylinder $x^2 + y^2 = 36, -1 \leq z \leq 7$.

39. Show that $x = 4\sin s\cos t, y = 4\sin s\sin t, z = 4\cos s$ is a parametrization of the sphere of radius 4 centered at the origin.

40. Find a parametrization of the cylinder $x^2 + z^2 = 100$.

41. Find a parametrization of the cylinder $y^2 + z^2 = 100$.