

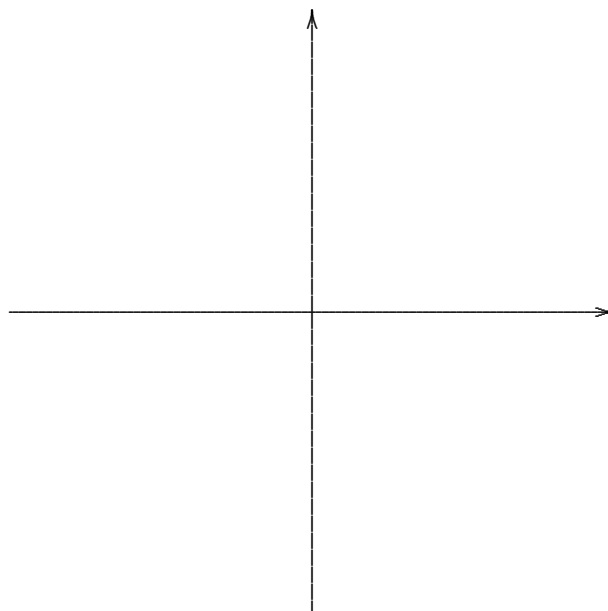
Quiz Nine**Lecture:** 8:30**SI:** Alex Ashley 9:30 Avni Becca Jason Matt**No notes. Calculators are allowed.**

Write clearly and explain your reasoning.

 1 (5 points) The equation

$$x^2 + y^2 + z^2 + 2x - 6y + z = 2$$

describes a sphere. Find the center and the radius of this sphere.

 2 (5 points) Suppose $f(x, y) = \sqrt{4 - x^2 - y^2}$. Describe the domain of $f(x, y)$. Graph this domain on the axes provided.

3 (6 points) Suppose $f(x, y) = e^{2xy} + 4x^2y - 3x^2 + xy + 2$. Calculate all the first and second partial derivatives: f_x , f_y , f_{xx} , f_{xy} , f_{yx} , and f_{yy} .

4 (4 points) BOB the writer of textbook answers tells you that for some function $g(x, y)$, the first partial derivatives are $g_x = 2x + 5y$ and $g_y = 4x - 3y$. Explain why BOB must be wrong. Use some (or all) of the second partial derivatives to justify your answer.