1. Let \( f(x,y) = \sqrt{9 - x^2 - y^2} \)

- Find and sketch the domain of this function:

- Draw contour plots for \( f(x,y) \) for \( z=0, z=1, z=2, z=3 \)

- What does this tell you about the shape of the surface?
- What is the maximum value of \( z \)? What is the minimum value of \( z \)?

2. There are two fields with a total of 1800 square yards. One field produces grain at the rate of \( \frac{2}{3} \) bushel per square yard while the other field produces grain at the rate of \( \frac{1}{2} \) bushel per square yard. If the total yield is 1,100 bushels, what is the size of each field?