Summary of lecture 1 - Visualising surfaces

- The maximal domain is the set of points at which the rule f could legitimately be used.
- A sphere, radius r, centre (a, b, c) is given by

$$(x-a)^2 + (y-b)^2 + (z-c)^2 = r^2,$$

where (x, y, z) are points on the sphere.

- For a surface z = f(x, y) the set of points satisfying, f(x, y) = c, is a *level curve* or *contour*,
- More generally, the intersection of plane x = constant or y = constant or z = constant and surface F(x, y, z) = 0 is called a *cross-section*,
- level curve L_c is the set of points (x, y) in D for which f(x, y) = c.
- Find and draw cross-sections to help visualise the surface.