Here the green lid is part of the sphere; the black sides are part of the cylinder.

All "big circles" on the sphere will be represented by ellipses; they have to pass through the point B if they are representing the meridians.

Note about sketching a sphere:
- The points:
  A (1, 0, 0)
  B (0, 0, 1)
  C (0, 1, 0)

should be sketched to be really equal distance from the origin, but not on the circle outlining the sphere.

This line is perpendicular to C1.
This is the axis of symmetry of the ellipse that represents the equator of the sphere (the long axis).

This line (call it C2) bisects the angle between x-axis and y-axis.