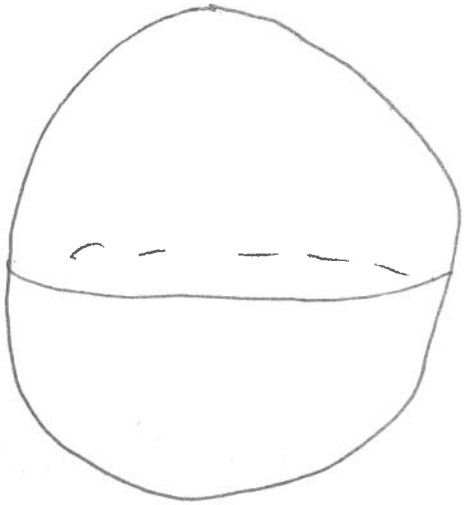
14.1, number 53: **Sketch a typical level set for the function**

$$f(x, y, z) = x^2 + y^2 + z^2.$$

**Answer:** The level set $f(x, y, z) = 0$ is the origin. If $c$ is a positive constant, then the level set $f(x, y, z) = c$ is the sphere of radius $\sqrt{c}$.

There is a picture on the next page.

Picture 14.1 Number 53



The shape a radius $\sqrt{c}$ with center $(0,0,0)$ is the level set $f(x,y,z)=c$ for $f(x,y,z)=x^2+y^2+z^2$