1. Find the center $C(x_0, y_0, z_0)$ and radius $r$ of the sphere described by the equation $x^2 + y^2 + z^2 + 2x + 8y - 4z = -28$.

2. Represent the position vector $\mathbf{r}_0 = \langle x_0, y_0, z_0 \rangle$ of the center you found with respect to a set of Cartesian axes, as in this diagram: (label tickmarks on the axis), and indicate the angle $\theta$ between $\mathbf{r}_0$ and the positive $z$-axis.

3. Make a wild guess from your diagram about the value of $\theta$ in degrees.

4. Find an expression for the exact angle $\theta$ in radians.

5. Give a decimal approximation to your angle in degrees, keeping only one decimal place.