

### Special Problem 5-2.4

A resistor with length 2 and radius 1 is aligned with the z-axis (but note that it is **not** centered at the origin).

This cylinder is made of material with **conductivity**:

$$\sigma = \frac{1}{2\pi z} \left[ \frac{1}{\Omega \cdot m} \right]$$

The electric potential within this resistor is:

$$V(\vec{r}) = -3z^2 \quad [\text{Volts}]$$

Determine the **numeric** value of the **resistance** of this cylinder.

