

### Answer on Question #42867 –Math -Statistics and Probability

Of the Type A electrical resistors produced by a factory, 85% have resistance greater than 41 ohms, and 3.7% of them have resistance greater than 45 ohms. The resistances follow a normal distribution. What percentage of these resistors has resistance greater than 44 ohms?

#### Solution

$\Pr[Z > z_1] = 0.85$  or  $\Phi(z_1) = 1 - 0.85 = 0.15$ . from Tables we find  $z_1 = -1.04$ .

$\Pr[Z > z_2] = 0.037$  or  $\Phi(z_2) = 1 - 0.037 = 0.963$ . from Tables we find  $z_2 = 1.79$ .

Then

$$z_1 = \frac{41 - \mu}{\sigma} = -1.04, z_2 = \frac{45 - \mu}{\sigma} = 1.79 \rightarrow \mu = 42.48, \sigma = 1.41.$$

The percentage of these resistors has resistance greater than 44 ohms is

$$\Pr[Z > z_3] = \Pr\left[Z > \frac{44 - 42.48}{1.41}\right] = \Pr[Z > 1.078] = 1 - \Phi(1.078) = 1 - 0.859 = 0.141 = 14.1\%.$$

**Answer: 14.1%.**