

### Answer on Question #48213 – Math – Statistics and Probability

According to the South Dakota Department of Health, the mean number of hours of TV viewing per week is higher among adult women than men. A recent study showed women spent an average of 34 hours per week watching TV and mean 29 hours per week. Assume that the distribution of hours watched follows the normal distribution for both groups, and that the standard deviation among the women is 4.5 hours and is 5.1 hours for the men.

- a) How many hours of TV do the 5% of women who watch the most TV per week watch?  
b) Find the comparable value for the men.

#### Solution

a) We have

$$P(z > z_1) = 0.05 \rightarrow P(z < z_1) = 0.95 \rightarrow z_1 = 1.645.$$

$$X_1 = \mu_1 + z_1 \cdot \sigma_1 = 34 + 1.645 \cdot 4.5 = 41.4$$

The 5% of women who watch the most TV per week watch bigger than 41.4 hours per week.

b) We have

$$P(z > z_2) = 0.05 \rightarrow P(z < z_2) = 0.95 \rightarrow z_2 = 1.645.$$

$$X_2 = \mu_2 + z_2 \cdot \sigma_2 = 29 + 1.645 \cdot 5.1 = 37.4.$$

The 5% of men who watch the most TV per week watch bigger than 37.4 hours per week.