

Answer on Question #50614 – Math – Statistics and Probability

A random sample of 33 individuals has an average age of 28 with a standard deviation of 5.

Find the margin of error for a 98% level of confidence.

Solution

The margin of error E is

$$E = z^* \frac{\sigma}{\sqrt{n}}$$

where σ is a standard deviation, n is a sample size. To find z^* , take z-score, because $n > 30$.

$$\alpha = 1 - \frac{98}{100} = 0.02.$$

The critical probability is

$$p = 1 - \frac{\alpha}{2} = 0.99.$$

$z^* = 2.33$ for a 98% level of confidence (from the z-table).

The margin of error for a 98% level of confidence is

$$E = 2.33 \cdot \frac{5}{\sqrt{33}} = 2.03 \text{ years.}$$

Answer: 2.03 years.