

Answer on Question #63236 – Math – Statistics and Probability

Question

Study of sea turtles research shows the shell Lengths have a distribution with a mean of 50cm and a standard dev of 10cm. In the study n=76 turtles where captured the mean length for the sample was 55.5cm. How likely is it to observe a sample mean of 55.5cm or larger?

Solution

$$\begin{aligned} P(\bar{X} > 55.5) &= P\left(Z > \frac{55.5-50}{\frac{10}{\sqrt{76}}}\right) = P(Z > 4.794) = 1 - P(Z < 4.794) = \\ &= 1 - 0.99999919 = 0.00000081, \text{ that is, } 0.000081 \%. \end{aligned}$$

Thus, it is unlikely to observe a sample mean of 55.5cm or larger.

Answer: 0.000081 %.