

Answer on Question #57497 – Math – Statistics and Probability

Question

Given a normal distribution with a mean of 10 and a standard deviation of 5, what is the probability that a variable is greater than 5?

Solution

To find the probability that a variable is greater than 5 we need to use formula:

$$P(\alpha \leq x < \beta) = \Phi((\beta - a) / \sigma) - \Phi((\alpha - a) / \sigma),$$

where $\Phi(t)$ is the cumulative distribution function of a standard normal random variable, $a = 10$ and $\sigma = 5$.

So, $P(x \geq 5) = 1 - \Phi((5 - 10) / 5) = 1 - \Phi(-1) = 1 - 0.1587 = 0.8413$.

Answer: 0.8413.