Answer on Question #70841 – Math – Statistics and Probability

Question

For a normal distribution with mean,μ=2, and standard deviation, σ=4 what proportion of observations take values greater than 4?

Solution

$$P(\xi < t) = \int_{-\infty}^{t} \frac{e^{-\frac{(x-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma} dx$$

$$P(\xi > t) = 1 - P(\xi < t) = 1 - \int_{-\infty}^{t} \frac{e^{-\frac{(x-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma} dx$$

Let substitute the given values $\mu = 2, \sigma = 4, t = 4$:

$$P(\xi > 4) = 1 - \int_{-\infty}^{4} \frac{e^{-\frac{(x-2)^2}{2\sigma^2}}}{\sqrt{2\pi}4} dx \approx 0.3085$$

Answer: 0.3085.