

Question #8525 What is the probability that the response time will be between five and ten minutes if the mean is 8.4 minutes and the standard deviation is 1.7 minutes?.

Solution. The problem supposes that we should define the distribution of the response time T . We consider that T is normally distributed $\mathcal{N}(8.4, 1.7^2)$. Although, normal distribution can take negative values it is OK to assume so due to with probability almost equal 1 it is positive. So we are to find $P(5 < T < 10) = P\left(\frac{5 - 8.4}{1.7} < \frac{T - 8.4}{1.7} < \frac{10 - 8.4}{1.7}\right) = \Phi(0.94) - \Phi(-2) \approx 0.92 - 0.02 = 0.9$, where Φ denotes the distribution function of standard normal r.v. as always.

Answer. 0.9.