Question

Consider the sampling distribution of x for random samples of 65 customer satisfactions ratings. Determine the probability of observing a sample mean greater than or equal to 42.95 when we assume that mean equals 42.

Solution

Assume that σ, standard deviation equals 2.64.

$\mu = 42, \sigma = 2.64, n = 65, \bar{x} = 42.95$

$\mu_{\bar{x}} = 42, \sigma_{\bar{x}} = \dfrac{\sigma}{\sqrt{n}} = \dfrac{2.64}{\sqrt{65}}$

$P(\bar{x} \geq 42.95) = P\left(z \geq \dfrac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}\right) = P\left(z \geq \dfrac{42.95 - 42}{\frac{2.64}{\sqrt{65}}}\right) = P(z \geq 2.9012) =$

$= 0.0019$