**Question: A population has a standard deviation of 25 and a mean of 300. Given a random sample of size 100, how likely is it that the sample mean will be within +/- 5 of the population mean?**

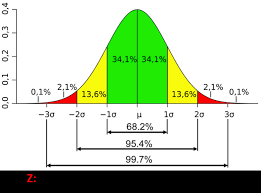
**SOLUTION: We seek to know as to What is the probability that the sample mean will be within +/- 5 of the population mean (to 4 decimals)?**

**A standard normal variate is defined as:**

**where**

**and**

**Therefore,**

**z(295) = (295-300)/25 = -0.2**  **z(305) = (305-300)/25 = +0.2  
P(295 < z < 305) = p(-0.2 < z < 0.2) = 0.1586**

**Hence is the probability that the sample mean will be within +/- 5 of the population mean (to 4 decimals) is 0.1586.**