GRADED ASSIGNMENT 5

MATH 107

STATISTICS SOLUTIONS

QUESTION 1

I n a standard normal population find the Z-score that is

The 92nd percentile

Solution

$p(Z < z) = 92\%$

$P(Z < z) = 0.92$

Since from normal distribution table

$P(Z < 1.41) = 0.92$

$\Rightarrow z = 1.41$

Has 62% of the population above it

Solution

$p(Z > z) = 62\%$

$P(Z > z) = 0.62$

$1 - P(Z < z) = 0.62$

$1 - 0.62 = P(Z < z)$

$0.38 = P(Z < z)$

And since from normal distribution table

$P(Z < -0.31) = 0.38$

$z = -0.31$

Question 2

A population of scores is approximately normally distributed with a mean equal to 70 and a standard deviation equal to 12. Find the percent of this people that are between the scores of 50 and 80.

Solution

Given

$\mu = 70$

$\sigma = 12$

Scores 50 and 80

$$\Rightarrow P(50 < x < 80) = P\left(\frac{50-70}{12} < \frac{x-\mu}{\sigma} < \frac{80-70}{12}\right)$$

$$P\left(\frac{-20}{12} < \frac{x-\mu}{\sigma} < \frac{10}{12}\right) = \phi\left(\frac{10}{12}\right) - \phi(-\frac{20}{12})$$

$$\Rightarrow 0.797672 - 0.047790$$

$$= 0.7499$$

$$= 0.7499 * 100$$

$$= 74.99\%$$