

Seminar 19

1. Find a) $P(Z > 2.58)$, b) $P(Z < -1)$, c) $P(-1.5 \leq Z < 5)$

2. Find the value of z if the area under a Standard Normal curve
 - a) to the right of z is 0.3632;
 - b) to the left of z is 0.1131;
 - c) between 0 and z , with $z > 0$, is 0.4838;
 - d) between $-z$ and z , with $z > 0$, is 0.9500.

3. Given the Normally distributed variable X with mean 18 and standard deviation 2.5, find
 - a) $P(X < 15)$;
 - b) the value of k such that $P(X < k) = 0.2236$;
 - c) the value of k such that $P(X > k) = 0.1814$;
 - d) $P(17 < X < 21)$.

4. If a set of grades on a statistics examination is approximately Normally distributed with a mean of 74 and a standard deviation of 7.0, find, *in the nearest integer*,
 - a) the lowest passing mark if the lowest 10% of the students are given F's;
 - b) the highest B if the top 5% of the students are given A's;
 - c) the lowest B if the top 10% of the students are given A's and the next 25% are given B's.

5. The average life of a certain type of small motor is 10 years with a standard deviation of 2 years. The manufacturer replaces free all motors that fail while under guarantee. If he is willing to replace only 3% of the motors that fail, how long a guarantee should he offer? Assume that the lives of the motors follow Normal distribution?

6. In a mathematics examination the average mark was 82 and the standard deviation was 5. All students with marks from 88 to 94 received a grade of B. If the marks are Normally distributed and 8 students received a B grade, how many students took the examination?