

STAT 324 HOME WORK 3 (covers chapter 6)

1. Given a standard normal distribution, find the area under the curve which lies
 - (a) to the left of $z = 1.43$;
 - (b) to the right of $z = -0.89$;
 - (c) between $z = -2.16$ and $z = -0.65$;
 - (d) to the left of $z = -1.39$;
 - (e) to the right of $z = 1.96$;
 - (f) between $z = -0.48$ and $z = 1.74$.
2. Find the value of z if the area under a standard normal curve
 - (a) to the right of z is 0.3622;
 - (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 a standard normal distribution, find the value of k such that
 - (a) $P(Z < k) = 0.0427$;
 - (b) $P(Z > k) = 0.2946$;
 - (c) $P(-0.93 < Z < k) = 0.7235$.
4. Given a normal distribution with $\mu = 30$ and $\sigma = 6$, find
 - (a) the normal-curve area to the right of $x = 17$;
 - (d) The normal-curve area to the left of $x = 22$;
 - (e) The normal-curve area between $x = 32$ and $x = 41$;
 - (f) The value of x that has 80% of the normal-curve area to the left;
 - (g) The two values of x that contain the middle 75% of the normal-curve area.
5. A soft-drink machine is regulated so that it discharges an average of 200 milliliters per cup. If the amount of drink is normally distributed with a standard deviation equal to 15 milliliters,
 - (a) what fraction of the cups will contain more than 224 milliliters?
 - (b) what is the probability that a cup contains between 191 and 209 milliliters?
 - (c) how many cups will probably overflow if 230 milliliters cups are used for the next 1000 drinks?
 - (d) below what value do we get the smallest 25% of the drinks?
6. If a set of grades on a statistics examination are approximately normally distributed with a mean of 74 and a standard deviation of 7.9, find
 - (a) the lowest passing grade 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.

7. A company pays its employees an average wage of \$9.25 an hour with a standard deviation of 60 cents. If the wages are approximately normally distributed and paid to the nearest cent,

(a) what percentage of the workers receive wages between \$8.75 and \$9.69 an hour inclusive?

(b) the highest 5% of the employee hourly wages is greater than what amount?

8. The weights of a large number of miniature poodles are approximately normally distributed with a mean of 8 kilograms and a standard deviation of 0.9 kilogram. If measurements are recorded to the nearest tenth of a kilogram, find the fraction of these poodles with weights

(a) over 9.5 kilograms;

(b) at most 8.6 kilograms;

(c) Between 7.3 and 9.1 kilograms inclusive.