

## Supplement to Homework Assignment Three

Important Note: Some of the questions below are impossible to answer, and this is deliberate. If a question cannot be answered, you need to recognize the fact and be able to say why.

1. Let  $X$  be distributed  $N(\mu=30, \sigma=5)$ .

a) What is  $P(X > 35)$ ?

b) For a random sample of size  $n=9$ , what is the probability that the sample mean is above 35?

2. Let  $X$  have an unknown distribution with  $\mu=250$  and  $\sigma=30$ .

a) What is  $P(X \leq 255)$ ?

b) For a random sample of size  $n=10$ , what is the probability that the sample mean is less than or equal to 255?

c) For a random sample of size  $n=100$ , what is the probability that the sample mean is less than or equal to 255?

3. IQ scores are distributed normally with a mean of  $\mu=100$  and a standard deviation of  $\sigma=16$ .

a) If a single individual is randomly selected and tested, what is the probability that his or her IQ is greater than 95?

b) If 25 individuals are selected at random and tested, what is the probability that their mean IQ is greater than 95?

c) If 500 individuals are selected at random and tested, what is the probability that their mean IQ is greater than 95?