

## Homework #2 (part 2)

Please present 4 significant figures in your final answers for probabilities. Also, make sure to explain your thought process as if the reader is one of your classmates.

1. (11 points) Assume  $X$  is normally distributed with a mean of 4 and a standard deviation of 2.

(a) Determine  $P(X > 2)$

(b) Determine  $P(0 < X < 7)$

(c) If  $P(x < X < 7) = 0.2$ , what is  $x$ ?

5. (7 points) The height of people is often assumed to be normally distributed. Let the mean height of men in the US is  $\mu = 1.77\text{m}$ , and standard deviation is  $\sigma = 0.08$ .

(a) What is the probability that a randomly selected man is taller than 1.83m?

(b) What is the probability that if 10 men are randomly selected, at least 3 of them are taller than 1.83m?

6. (7 points) Measurement error that is normally distributed with a mean of zero and a standard deviation of 0.5 grams is added to the true weight of a sample. Then the measurement is rounded to the nearest gram. Suppose that the true weight of a sample is 156.5 grams.

(a) What is the probability that the rounded result is exactly 157 grams?

(b) What is the probability that the rounded result is 155 grams or lesser?