Unit 3 Practice Worksheet

1 Standard Normal Distribution

a) Find the probability that $z < -1.8$.

b) Find z_0 such that $P(z > z_0) = 0.15$.

c) Find the two critical z-values that enclose the middle 90% of the standard normal distribution.

2 Real-World Normal Distribution

The average height of adult men is 70 inches with a standard deviation of 3 inches.

a) What is the probability that a randomly selected man is taller than 74 inches?

b) What height corresponds to the 10th percentile?

3 Confidence Intervals for the Mean

A random sample of 25 students had a mean study time of 12.5 hours per week with a standard deviation of 3.2 hours.

a) Construct a 95% confidence interval for the mean weekly study time.

b) Interpret the interval in context.

4 Determining Confidence Level

If $z_a/_2 = 2.33$, what is the corresponding confidence level (in %)?

5 Confidence Interval Interpretation

A 90% confidence interval for the average commute time of college students is (21.4, 28.6) minutes.

a) Write this interval as: point estimate ± margin of error.

b) If a researcher claims that the average commute time is 30 minutes, what can we conclude?

☐ Claim is valid ☐ Claim is invalid ☐ Insufficient information

6 Estimating Sample Size

A university wants to estimate the average cost of dorm meals within ±$50 at a 95% confidence level. Assume the population standard deviation is $180. Find the minimum sample size required.

7 Confidence Interval for Proportions

In a sample of 200 college students, 110 said they use public transportation weekly.

a) Construct a 95% confidence interval for the true proportion of students who use public transportation weekly.