

Homework 17: The Normal Distribution

1. Use a standard normal table to calculate $\int_{-.44}^{1.33} e^{-z^2/2} dz$.
2. Let Z be a standard normal random variable. Find the following probabilities:
 - (a) $P(0 \leq Z \leq 2.07)$
 - (b) $P(Z > -1.06)$
 - (c) $P(Z \leq -2.33)$
 - (d) $P(-.33 \leq Z \leq 1.2)$
3. Assume that Z is a standard normal random variable. For what values of z are the following statements true?
 - (a) $P(Z \leq z) = 0.33$
 - (b) $P(-1.00 \leq Z \leq z) = 0.564$
 - (c) $P(-z \leq Z \leq z) = 0.8$
4. Suppose that X is $N_{-10,16}$ distributed. Find (a) $P(X > -12)$, (b) $P(-11 < X < -8)$.
5. Suppose that the height, in inches, of a 25 year old man is a normal random variable with parameters $\mu = 71$ and $\sigma^2 = 6.25$. What percentage of 25 year old men are over 6 feet 2 inches tall? What percentage of men in the 6-footer club are over 6 foot 5 inches? How tall must a 25 year old man be in order to be in the top one percentile in height?
6. Everyone in a school is weighed. 40% weigh over 110 pounds and 13% weigh over 170 pounds. Assume that weight is normally distributed. Find the best choice for μ and σ .