Problem Set #3 1: Z-scores and Probability

1. Assume heights are normally distributed with a mean of 68 inches and a standard deviation of 4 inches.
   1. Use z-scores to determine the probability that an Amherst student is at least 5'3".  Hint: consult the unit normal table, which can be downloaded from Moodle.
   2. Use z-scores to determine the proportion of people that are between 5'4" and 6'0" (i.e., at least 5.4", but not taller than 6'0").  Use the same procedure as in #1.
   3. If I select a person at random, what would we estimate is the probability they will be over 6'0"?
2. A physical fitness association is including the mile run in its secondary school fitness test. The time for this event is approximately normally distributed with a mean of 450 seconds and a SD of 40 seconds. If the association wants to designate the fastest 10% as “excellent” what time should the association set as their cutoff?