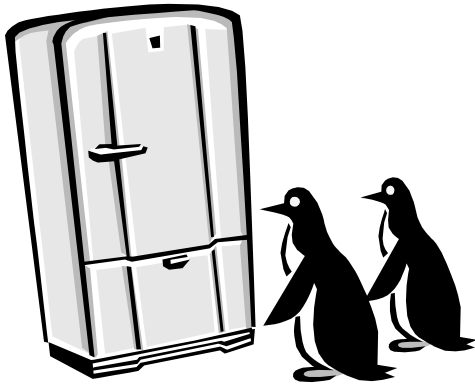
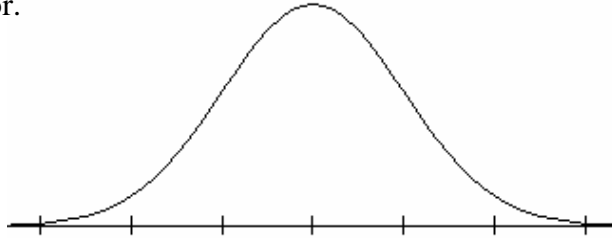


## *That old refrigerator...*

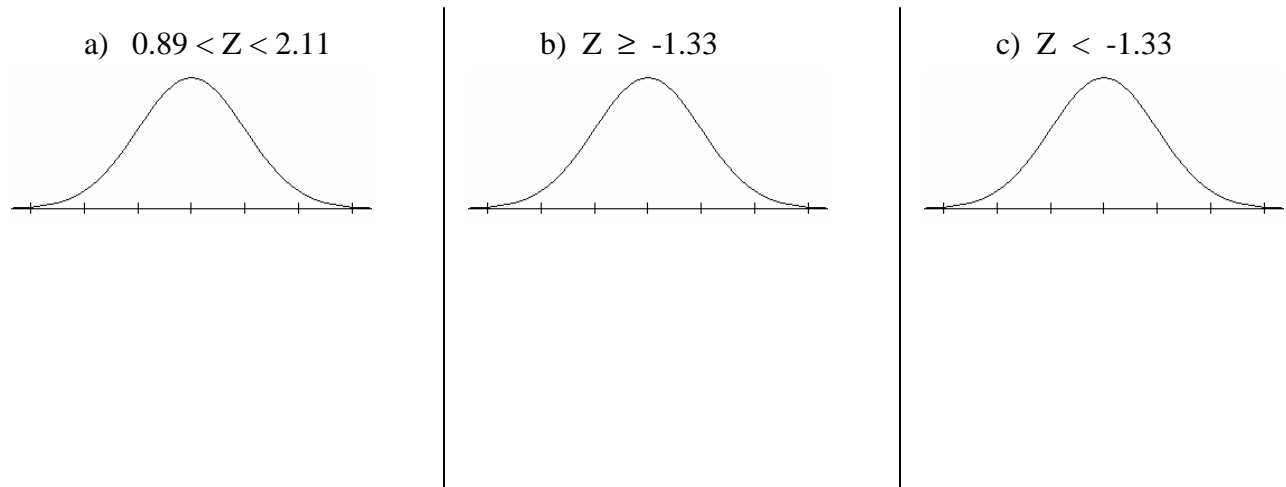


- 1) The lifetime of a refrigerator is a normal distribution with a mean of ten years and a standard deviation of 1.5 years.
- a) Sketch the distribution of  $X$  which represents the lifetime of this particular brand of refrigerator.



- b) What percentage of refrigerators last between 6.2 and 9.1 years?
- c) What percentage of refrigerators last more than 12 years and 6 months?
- d) What percentage of refrigerators last less than 5 years?
- e) Would it be highly unlikely for a refrigerator to last less than five years?  
Justify your answer.
- f) How long does a refrigerator last if its lifetime is not in the upper 10%?
- g) How long does a refrigerator last if its lifetime is in the MIDDLE 50%?

2) Sketch the area on the Standard Normal Curve that represents the probability of the following events and then determine with your calculator the probability.



3) A z-score tells us how many standard deviations a particular value is from the mean. Assume that exam scores are normally distributed. An instructor gives an exam where the mean is 78 and the standard deviation is 8.

- a) Find the z-score for someone who makes 100 on the exam.
  
  
  
  
  
  
  
  
  
  
- b) Find the z-score for someone who makes a 70 on the exam.
  
  
  
  
  
  
  
  
  
  
- c) If you make a 90 on the exam, how many standard deviations above the mean are you?
  
  
  
  
  
  
  
  
  
  
- d) If I tell you that you are 2 standard deviations below the mean, what grade did you make?
  
  
  
  
  
  
  
  
  
  
- e) Use the z-score formula to verify that an exam score of 74 corresponds to a z-score of  $-0.5$ .

