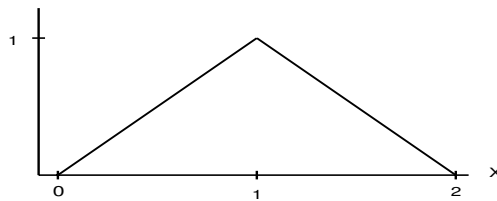


## STA 275 Practice Problems 2

1. Problem 4.207 on pages 185-186 of the textbook.
2. Problem 4.209 on page 186 of the textbook.
3. What is the difference between two disjoint events and two independent events? Please explain.
4. Problem 5.36 on page 203 of the textbook.
5. A new variety of turf grass has been developed for use on golf courses, with the goal of obtaining a germination rate of 85%. To evaluate the grass, 20 seeds are planted in a greenhouse so that each seed will be exposed to identical conditions. If the 85% germination rate is correct, what is the probability that 18 or more of the 20 seeds will germinate?
6. Let  $X$  be the number of tree seedlings in a randomly selected one square meter plot in a forest. Suppose that  $x$  has a Poisson distribution with  $\lambda = 5$ , which corresponds to an average of five seedlings per square meter. Find the probability that a randomly selected one square meter plot contains no seedlings.
7. The density curve of a continuous variable  $X$  is given below.



- a. Find the height of the density curve.
  - b. What proportion of  $x$ -values are less than  $\sqrt{2}/2$ ?
  - c. What proportion of  $x$ -values are between  $\sqrt{2}/2$  and 1?
  - d. Find the mean of the continuous variable  $x$ .
  - e. Find the variance of the continuous variable  $x$ .
  - f. Find the lower quartile, median, and upper quartile of the continuous variable  $x$ .
8. Find the 35th percentile of the standard normal distribution.
  9. A machine that cuts corks for wine bottles operates so that the diameter of the cork produced is approximately normally distributed with mean 3.0 cm and standard deviation 0.1 cm.
    - a. Find the probability that the diameter of a randomly selected cork is no more than 2.8 cm.
    - b. What is the probability that the diameter of a randomly selected cork is equal to 3.0 cm?
    - c. The specification call for corks whose diameters are between 2.9 cm and 3.1 cm. A cork not meeting the specifications is considered defective (a cork that is too small leaks while a cork that is too large doesn't fit the bottle). What proportion of the corks produced by the machine are defective?