

Math 2123 - Math Center Worksheet  
Section 6.5

1. Determine whether the given functions could be probability density functions or not.

a.  $f(x) = \begin{cases} 5x^3 - 4 & \text{if } 0 \leq x \leq 3 \\ 0 & \text{otherwise} \end{cases}$ .

b.  $g(x) = \begin{cases} 0.65^x & \text{if } 4 \leq x \leq 7 \\ 0 & \text{otherwise} \end{cases}$ .

c.  $h(x) = \begin{cases} \frac{1}{x} & \text{if } 1 \leq x \leq e \\ 0 & \text{otherwise} \end{cases}$

2. Given the pdf  $f(x) = \begin{cases} \frac{3}{117}x^2 & \text{if } 2 \leq x \leq 5 \\ 0 & \text{otherwise} \end{cases}$ , answer the following:

a. Find the mean. Round to the thousandths place.

b. Find the standard deviation. Round to the thousandths place.

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### Section 6.6

Round all answers to the thousandths place.

1. The average distance between consecutive cars on a highway is 154 feet. This distance follows an exponential distribution.
  - a. Write the pdf.
  - b. Find the probability that the distance between consecutive cars is 20 feet or less.
  - c. Find the probability that the distance between consecutive cars is at least 100 feet.

2. The height of students in a calculus class is normally distributed with a mean of 67.2 inches and a standard deviation of 3.15 inches.
  - a. If a student is selected at random from this class, what is the probability that he/she is between 61 and 72 inches tall?
  - b. What percentage of students are at least 66 inches tall?