Density Curves and Normal Distribution Worksheet

For the density curve pictured above, identify:

a. Which way is the density curve above skewed?

b. Identify the mean and median of the density curve above.

c. The mean splits the area under the density curve. Is this an even split, or uneven?

1. Circle the data set that might have been used to make the above density curve?

<table>
<thead>
<tr>
<th>Student Height</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>5’6”</td>
<td>47</td>
</tr>
<tr>
<td>5’8”</td>
<td>62</td>
</tr>
<tr>
<td>5’10”</td>
<td>36</td>
</tr>
<tr>
<td>6’0”</td>
<td>14</td>
</tr>
<tr>
<td>6’2”</td>
<td>6</td>
</tr>
<tr>
<td>6’4”</td>
<td>4</td>
</tr>
<tr>
<td>6’6”</td>
<td>2</td>
</tr>
</tbody>
</table>

1 Figured sourced from York University’s Economics Department website: <http://dept.econ.yorku.ca/~jbsmith/ec2500_1998/lecture9/image90.gif>
The normal curve above describes the percentage of scalp coverage of men of age 50. The mean value of the data is 32% scalp coverage and the standard deviation is 10%.

a. In which range of values, centered at the mean, do 68% of the data fall? 95% of the data?

b. 7% of a 50-year-old professor’s scalp is covered by hair. What is the z-score of this professor’s scalp coverage?

c. How many standard deviations away from the mean is this professor’s scalp coverage?

d. A 50-year-old female colleague of the above professor has 60% of her scalp covered by hair. 50 year-old female scalp coverage is described by the normal distribution $N(80,10)$. What is the z-score of the female professor’s scalp coverage?
Campus Academic Resource Program
Density Curves and Normal Distribution Worksheet

e. The female professor has a fuller head of hair than what proportion of 50-year-old women?

f. How about the male professor? Which of the two have more hair than a greater proportion of their respective populations?

3. Find the value of $x$ in each of the following diagrams:

- (a) $X \sim N(60, 25)$

- (b) $X \sim N(4, 9)$

- (c) $X \sim N(200, 36)$

- (d) $X \sim N(0, 4)$

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$^2$ Figured sourced from the Math’s Teaching website: <http://mathsteaching.files.wordpress.com/2008/02/normal-tables-in-reverse.jpg>