Lesson 6-7 Probability

1- Find a value of c for which $f(x)$ is a pdf on the indicated interval.

$$f(x) = cx + x^2 , \quad [0,1]$$

A- 4
B- 3
C- $\frac{4}{3}$
D- 1.5

2- Find a value of c for which $f(x)$ is a pdf on the indicated interval.

$$f(x) = 2ce^{-cx} , \quad [0,2]$$

A- Ln2
B- 0.5Ln2
C- 2Ln2
D- Ln4

3- Find a value of c for which $f(x)$ is a pdf on the indicated interval.

$$f(x) = \frac{c}{1+x^2} , \quad [0,1]$$

A- $\frac{4}{\pi}$
B- $\frac{\pi}{4}$
C- π
D- 1.7

4- find a value of c for which $f(x)$ is a pdf on the indicated interval.

$$f(x) = \frac{c}{\sqrt{1-x^2}} , \quad [0,1]$$

A- 1.9
B- π
C- $\frac{2}{\pi}$
D- $\frac{\pi}{2}$

5- Suppose that $f(x) = \frac{0.4}{\sqrt{2\pi}} e^{-0.08(x-68)^2}$ is pdf, find the probability that a randomly selected American male has height in the Between 6 ft 6 in and 6 ft 10 in.

A- 0.0031661
B- 0.00068634
C- 0.0032661
D- 0.00067634

6- Suppose that $f(x) = \frac{0.4}{\sqrt{2\pi}} e^{-0.08(x-68)^2}$ is pdf, find the probability that a randomly selected American male has height in the Between 2 ft and 5 ft.

A- 0.00068724
B- 0.00687143
C- 0.00068714
D- 0.00067714

7- Find the indicated probabilities, given that the lifetime of a lightbulb is exponentially distributed with pdf $f(x) = 6e^{-6x}$(with *x* measured in years).
The lightbulb lasts less than 3 months.

A- 0.97687
B- 1.77687
C- 0.87767
D- 0.77687

8- Find the indicated probabilities, given that the lifetime of a lightbulb is exponentially distributed with pdf $f(x) = 6e^{-6x}$(with *x* measured in years).
The lightbulb lasts between 3 and 10 years.

A- 1.52300×10^{-5}
B- 1.52300×10^{-7}
C- 1.52300×10^{-6}
D- 1.52300×10^{-8}

9- Find (a) the mean and (b) the median of the random variable with the given pdf.

$$f(x) = 3x^2 \ , \quad [0,1]$$

A- (a)0.95 (b)0.7937
B- (a)0.75 (b)0.7937
C- (a)0.75 (b)0.8937
D- (a)0.95 (b)0.9937

10- Find (a) the mean and (b) the median of the random variable with the given pdf.

$$f(x) = \frac{\frac{\pi}{4}}{1+x^2} \ , \quad [0,1\,]$$

A- (a)0.4413 (b)0.4142
B- (a)0.4413 (b)0.5142
C- (a)0.5413 (b)0.4142
D- (a)0.5413 (b)0.5142

11- Find (a) the mean and (b) the median of the random variable with the given pdf.

$$f(x) = \frac{1}{2}sinx \ , \quad [0,\pi]$$

A- (a) π (b)1.57
B- (a)$\frac{\pi}{2}$ (b)1.57
C- (a)$\frac{2}{\pi}$ (b)1.57
D- (a)$\frac{\pi}{2}$ (b)1.87

12- Find (a) the mean and (b) the median of the random variable with the given pdf.

$$f(x) = cosx \ , \quad [0,\frac{\pi}{2}]$$

A- (a)1.57080 (b)0.5236
B- (a)0.57080 (b)1.5236
C- (a)0.77080 (b)0.7236
D- (a)0.57080 (b)0.5236