

INFO 7374 MACHINE LEARNING IN FINANCE

ASSIGNMENT I

1. What is the Kurtosis of the Standard Normal Distribution?
 - A. 0
 - B. 1
 - C. 2
 - D. 3
2. What is the Skewness of the Standard Normal Distribution?
 - A. 0
 - B. 1
 - C. 2
 - D. 3
3. If $f(x)$ is a density function defined from the negative infinity to positive infinity, what is the value of $\int_{-\infty}^{+\infty} f(x)dx$?
 - A. 0
 - B. 1
 - C. 0.5
 - D. 2
4. Which of the follows is the mean of a uniform random variable $x \sim U[a, b]$?
 - A. $\frac{a+b}{2}$
 - B. $b - a$
 - C. $\frac{(b-a)^2}{6}$
 - D. $\frac{(b-a)^2}{12}$
5. Given $x \sim U[0, 1]$, which of the following gives $y \sim U[a, b]$?
 - A. $y = a + bx$
 - B. $y = a - bx$
 - C. $y = a + (b - a)x$
 - D. $y = a + (b - a)^2x$
6. Given $x \sim N(0, 1)$, which of the following gives $y \sim N(a, b)$?
 - A. $y = a + bx$
 - B. $y = a + b^2x$
 - C. $y = a + \sqrt{b}x$
 - D. $y = a + (b - a)^2x$
7. Which of the following distributions is appropriate to model the stock price?

- A. Uniform
- B. Normal
- C. Log-normal
- D. Students-t

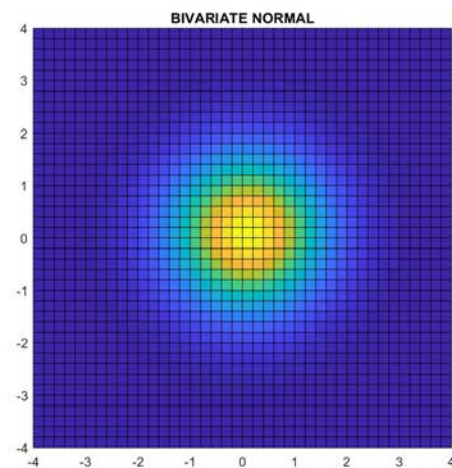
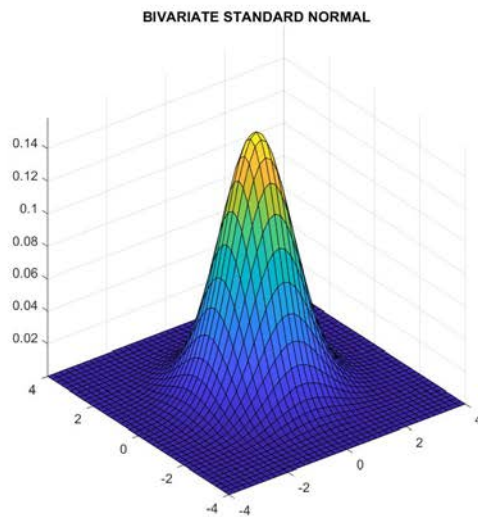
8. Which of the following distributions is appropriate to model a parameter distributed within a certain interval, say $[0.2, 0.5]$?

- A. Exponential
- B. Beta
- C. Gamma
- D. Weibull

9. Let $Y = \rho X + \sqrt{1 - \rho^2}U$ where X and U are normally distributed $\sim N(0,1)$. What is the correlation between Y and X ?

- A. ρ
- B. $\sqrt{1 - \rho^2}$
- C. ρ^2
- D. $1 - \rho^2$

10. Given the following counter plot of a bivariate normal distribution, what could you infer from the graph about the correlation between the two variables?



- A. $\rho > 0$
- B. $\rho < 0$
- C. $\rho = 0$
- D. No sufficient information