

MATH 315 Fall, 2024

**Assignments 19 - 22**

**Assignment 19**

*Due: Monday, November 18*

*I. Reading*

Read Section IV ("Stochastic Processes") of Chapter 10: **Elementary Probability** of our text and Section I ("Markov Chains") of Chapter 11: **Markov Processes**.

II. *Exercises* Chapter 11: 2 - 4; Appendix II: 6,7; *Ask Marilyn* Problem (Chapter 10: 25).

**Assignment 20** *Due: Wednesday, November 20*

*I. Reading*

Read Sections II ("Matrix Operations and Markov Chains"), III ("Regular Markov Chains" and IV ("Absorbing Markov Chains") of Chapter 11: **Markov Processes** of our text.

II. *Exercises* Appendix III: 11a-d, 12; Chapter 11: 21 (Parts 1 - 5), 26, 27, 41, 42

**Assignment 21** *Due: Friday, November 22*

*I. Reading*

) of Chapter 11: **Markov Processes** of our text and Chapter 12: **Two Models of Cultural Stability**.

II. *Exercises* Chapter 11: Problems 33, 40 43a

**Assignment 22** *Due: Monday, December*

*Exercise:* Chapter 11: Exercise 43 (b); Chapter 12: Problems 1, 2, 3, 15.

The Ask Marilyn Problem  
aka The Monty Hall Problem  
aka The Let's Make a Deal Problem

# Ask Marilyn™

BY MARILYN VOS SAVANT



You are in error—and you have ignored good counsel—but Albert Einstein earned a dearer place in the hearts of the people after he admitted his errors.

—Frank Rose, Ph.D.,  
University of Michigan

I have been a faithful reader of your column and have not, until now, had any reason to doubt you. However, in this matter, in which I do have expertise, your answer is clearly at odds with the truth.

—James Rauff, Ph.D.,  
Millikin University

May I suggest that you obtain and refer to a standard textbook on probability before you try to answer a question of this type again?

—Charles Reid, Ph.D.,  
University of Florida

Your logic is in error, and I am sure you will receive many letters on this topic from high school and college students. Perhaps you should keep a few addresses for help with future columns.

—W. Robert Smith, Ph.D.,  
Georgia State University

You are utterly incorrect about the game-show question, and I hope this controversy will call some public attention to the serious national crisis in mathematical education. If you can admit your error, you will have contributed constructively toward the solution of a deplorable situation. How many irate mathematicians are needed to get you to change your mind?

—E. Ray Bobo, Ph.D.,  
Georgetown University

I am in shock that after being corrected by at least three mathematicians, you still do not see your mistake.

—Kent Ford,  
Dickinson State University

Maybe women look at math problems differently than men.

—Don Edwards, Sunriver, Ore.

You are the goat!

—Glenn Calkins  
Western State College

You're wrong, but look at the positive side. If all those Ph.D.s were wrong, the country would be in very serious trouble.

—Everett Harman, Ph.D.,  
U.S. Army Research Institute

Gasp! If this controversy continues, even the *postman* won't be able to fit into the mailroom. I'm receiving thousands of letters, nearly all insisting that I'm wrong, including one from the deputy director of the Center for Defense Information and another from a research mathematical statistician from the National Institutes of Health! Of the letters from the general public, 92% are against my answer; and of the letters from universities, 65% are against my answer. Overall, nine out of 10 readers completely disagree with my reply.

But math answers aren't determined by votes. For those readers new to all this, here's the original question and answer in full, to which the first readers responded:

"Suppose you're on a game show, and you're given a choice of three doors. Behind one door is a car; behind the others, goats. You pick a door—say, No. 1—and the host, who knows what's behind the doors, opens another door—say, No. 3—which has a goat. He then says to you, 'Do you want to pick door No. 2?' Is it to your advantage to switch your choice?"

I answered, "Yes, you should switch."