Homework assignment #2

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More probability review

Problem #1. (5 points)

Let E and F be any two events. If

$$\mathbb{P}[E] = \mathbb{P}[F] = \frac{2}{3},$$

then E and F cannot be mutually exclusive. *True or false? Why?*

Problem #2. (5 points)

If events A and B are mutually exclusive, they are necessarily independent. *True or false? Why?*

Problem 3. (5 points)

A test is used to determine whether people exhibiting green spots have the *duckpox* or not. It is believed that at any given time 4% of people exhibiting green spots actually have the *duckpox*. The test is 99% accurate if a person actually has the *duckpox*. The test is 96% accurate if a person does **not** have the *duckpox*. What is the probability that a randomly selected person who tests positive for the *duckpox* actually has the *duckpox*?

Textbook problems on the binomial

Problem 1. (a is 4 points; b is 2 points; c is 2 points; d is 3 points; e is 4 points=15 points total)

Solve **Problem 4.18** from the textbook.

Problem 2. (a is 3 points; b is 2 points; c is 3 points = 8 points total)

Solve **Problem 4.22 (a, b, c)** from the textbook.

Problem 3. (2 points each)

Solve **Problem 4.24 (a, b, c)** from the textbook.

Problem 4. (2 points each)

Solve **Problem 4.26** from the textbook.