Intro to Data Science HW 2

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Contents

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Question 1

1a.

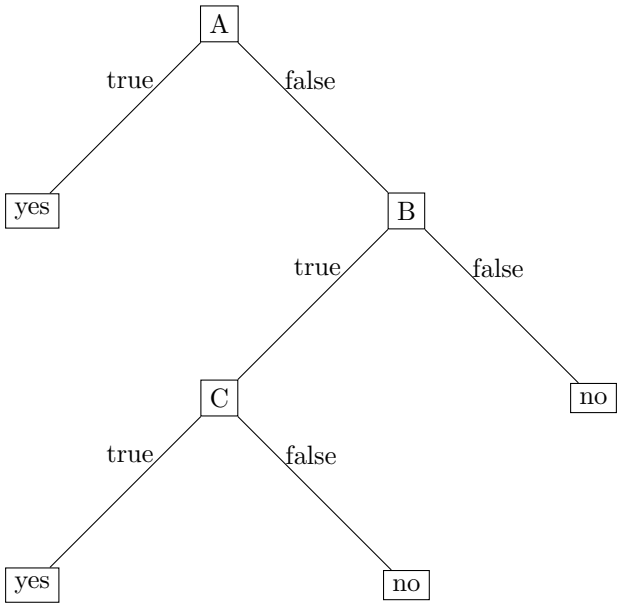
$$n - m(1 - (\frac{m-1}{m})^n) \tag{1}$$

1b.

$$1 - (answer to 1a.) \tag{2}$$

Question 2

Question 5



Question 7

Assuming that you've picked door number 1, there are three (equally likely) possible scenarios:

1. You pick the door with the prize, and the other two doors are empty.
2. Both your door and door number 2 are empty.
3. Both your door and door number 3 are empty.

Overall, there are two groups of possibilities - that you've picked a winning door (1/3) or you've picked an empty door (2/3).

If an empty door is revealed, it must either be door 2 or 3, because you picked door number 1. Now you are presented with the same two groups - but the second group's doors now have probabilities 0 and 2/3 of containing the prize, when originally they were 1/3 each.

Since your door (door number 1) has a probability of 1/3 and the other closed door has a probability of 2/3, you should switch doors.