Probability theory

1. There is 0.9 chance of meeting a passing by car on a desert road in 1 hour. What is the probability of seeing a car in 15 minutes?
   * Probability of:
   * at least 1 car in 60 minutes: 0.90
   * no car in 60 minutes: 0.10
   * no car in 15 minutes: 0.562341 (because: no car in 60 minutes: 0.56\*0.56\*0.56 = 0.10)
   * at least 1 car in 15 minutes: 1–0.56 = 0.44
2. Assume that you receive 3 (on average) spam emails during the day. In the long run, what will be the share of days when you receive more than 5 spam emails?
   1. If I receive 3 spam emails on average during the day, that means in the long run the share of days when I receive 6 or more spam emails can be figured out using the Poisson Distribution, which I have attached a screen shot of how I coded it in Python.

**1 email / 8 hours x 24 hours = 3 emails expected**

**1 email / 4.8 hours x 24 hours = 6 emails expected**

The probability of 6 emails in 24 hours is 5.04%.

In the long run the share of the days I receive more than 5 SPAM emails will be 5.04%.