

Lecture 13 Activity: Exponential Growth and Decay

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math.dartmouth.edu/~blogsdon/activity13.pdf

1. 100 rabbits are released into a large forest. After 10 years, there are 500 rabbits. Assume the population grows exponentially. How many rabbits will there be after 20 years? What will be the rate of growth of the rabbits after 20 years? How long will it take to reach a population of 10,000 rabbits?
2. Suppose that the half-life of caffeine in a person's body is 6 hours. If the person drinks a cup of coffee with 120 mg of caffeine at 8 AM, how much caffeine will remain in their body at 8 PM?
3. There are three savings accounts available:
 - ▶ Account A offers 5% interest compounded annually.
 - ▶ Account B offers 5% interest compounded quarterly (i.e. every three months).
 - ▶ Account C offers 4.9% interest compounded continuously.

Suppose that you invest \$1000 in each account. How much money in total will you have after 10 years? Which account is the best?