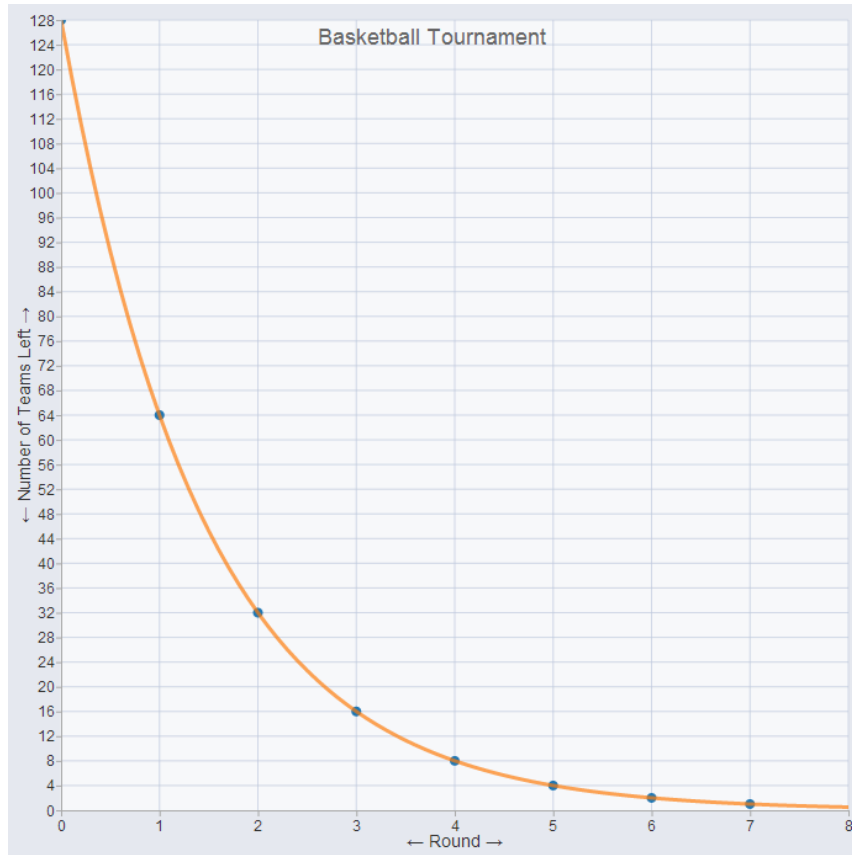
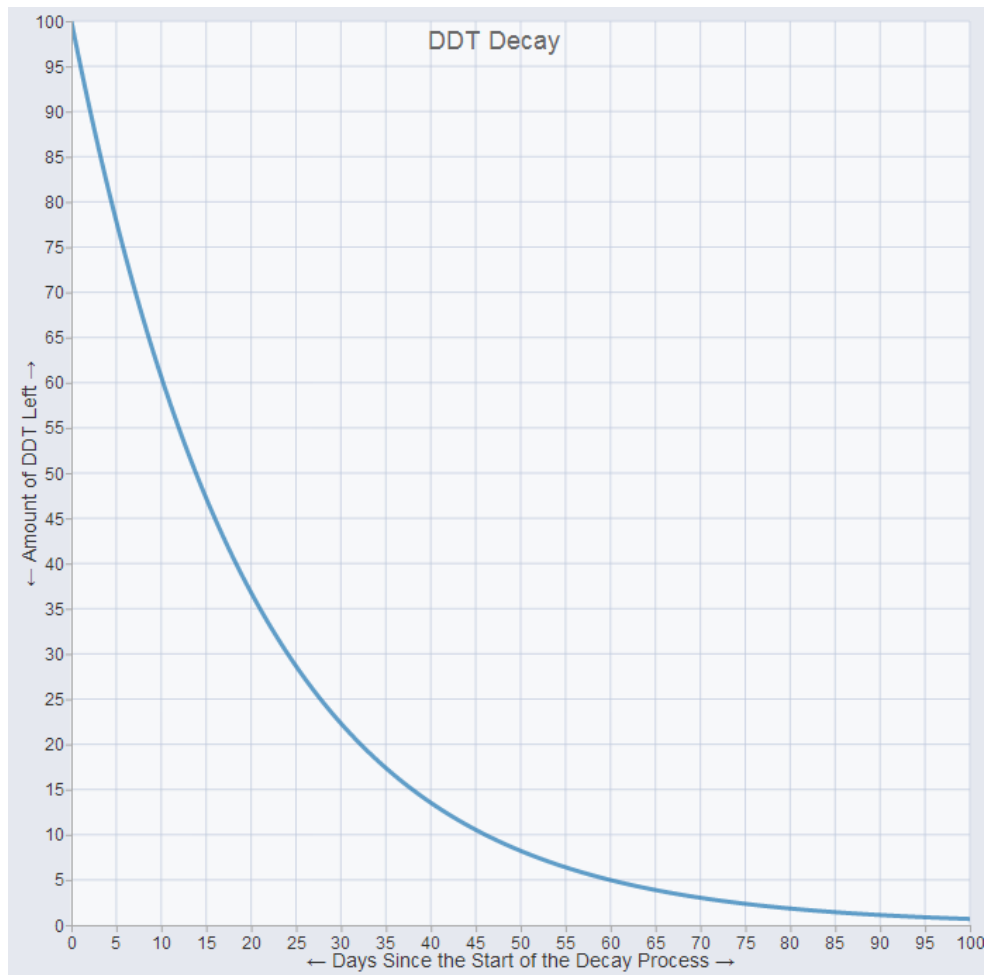


Your school is participating in a nationwide basketball tournament. The tournament begins with 128 teams and the through each round the number decreases by half. Use this information and the corresponding graph to answer the following questions



1. Write an equation to model this situation using the formula for exponential decay.
2. How many teams will remain in the tournament in the 3rd round if $t=0$ represents the first round?
3. In what round will there be exactly 4 teams in the tournament if $t=0$ represents the first round?
4. Although this situation is graphed as a continuous function (above), why would it be inappropriate to calculate or look at what happens when $t=1.5$?

Say the chemical substance DDT decays at a rate of 5% per day in certain environmental conditions. Suppose you start with 100 grams of DDT. Use the formula $A = Pe^{rt}$ and the corresponding graph below to answer the following questions.



5. Write an equation to model this situation using the given formula.
6. Approximately how long after the beginning of the decay process will there be 10 grams of DDT left?
7. Approximately how much DDT is left after 5 days?
8. What is the half-life of DDT in these environmental conditions?

Answer Key:

1. $A = 128(0.5)^t$
2. 32 teams
3. Round 6
4. The rounds are designated only by integer values (e.g., round 1, round 2). There is no such thing as round 1.5.
5. $A = 100e^{-0.05t}$
6. About 75 grams
7. After about 45 days
8. About 13 days