Exponential Growth and Decay

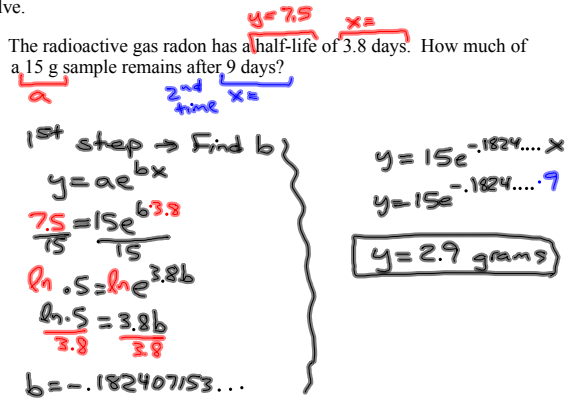
1) 2.90 g
2) 12.50 years
3) 4.81 hours or 4:49 P.M.
4) 3.26 g
5) 5726.68 years
6) 998.12 g
7) a) 15.54 years
   b) 1967

Algebra II
Exponential
Growth and Decay
V-5

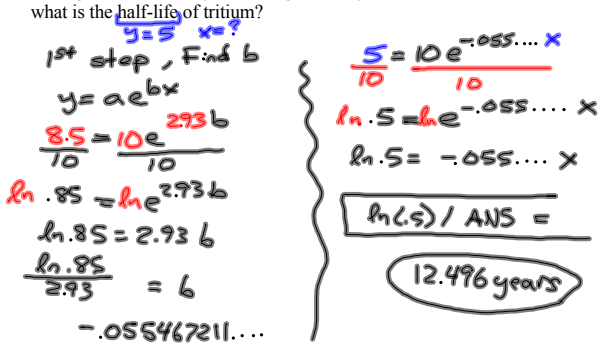
Name:_____

Solve.

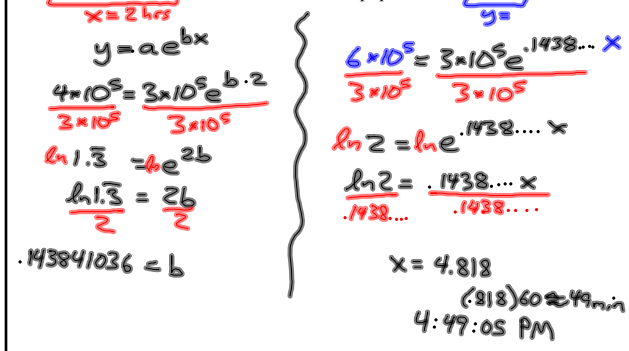
1) The radioactive gas radon has a half-life of 3.8 days. How much of a 15 g sample remains after 9 days?



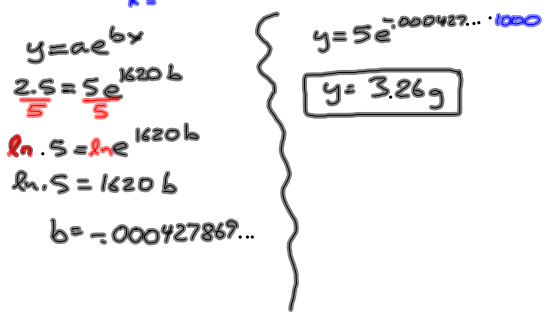
2) If 10 g of tritium decays to 8.50 g in 2.93 years, what is the half-life of tritium?



3) The population of a colony of bacteria grew from $3x10^5$ to $4x10^5$ from noon until 2 PM. At what time will the population be $6x10^5$?

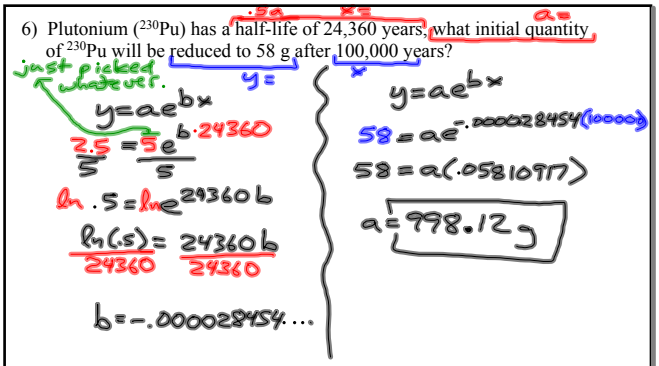


4) The half-life of radium-226 is 1620 years. How much of a 5 g sample remains after 1000 years?

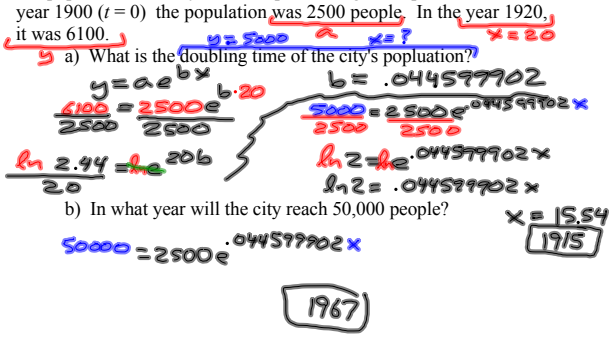


5) If 20 g of Carbon-14 (^{14}C) decomposes to 17.72 g in 1000 years, what is the half-life of ^{14}C?

6) Plutonium (^{230}Pu) has a half-life of 24,360 years; what initial quantity of ^{230}Pu will be reduced to 58 g after 100,000 years?



7) The population of a city has an exponential growth pattern. In the year 1900 (t = 0) the population was 2500 people. In the year 1920, it was 6100.



a) What is the doubling time of the city's popluation?

b) In what year will the city reach 50,000 people?

x = 15.54

1915

1967