



Exponential Function Solution Equation - Decay (Continuous) Scenario to Starting Value

1

A bacteria population starts at a certain size. It declines continuously at 7% per week. After 9 weeks it has decreased to a population of 319 bacteria.

Rearrange the exponential equation to solve for for the starting population given this scenario?

A	B
$P_0 = \frac{319}{e^{(-0.07 \cdot 9)}}$	$P_0 = \frac{e^{(-0.07 \cdot 9)}}{319}$

2

A radioactive material starts at a certain isotope concentration. It decays continuously at 3% per hour. After 9 hours it has decayed to an isotope concentration of 458ppm.

Rearrange the exponential equation to solve for for the starting concentration given this scenario?

A $R_0 = \frac{458}{e^{(\frac{-0.03}{9})}}$	B $R_0 = \frac{e^{(-0.03 \cdot 9)}}{458}$
C $R_0 = \frac{458}{e^{(-0.03 \cdot 9)}}$	

3

A toxin starts at a certain concentration. It declines continuously at 8% per hour. After 7 hours it has decreased to a concentration of 285mg/L.

Rearrange the exponential equation to solve for for the starting concentration given this scenario?

A $C_0 = \frac{e^{(-0.08 \cdot 7)}}{285}$	B $C_0 = \frac{285}{e^{(-0.08 \cdot 7)}}$
C $C_0 = \frac{285}{e^{(\frac{-0.08}{7})}}$	

4

A bacteria population starts at a certain size. It declines continuously at 3% per month. After 6 months it has decreased to a population of 584 bacteria.

Rearrange the exponential equation to solve for for the starting population given this scenario?

A $P_0 = \frac{584}{e^{(\frac{-0.03}{6})}}$	B $P_0 = \frac{584}{e^{(-0.03 \cdot 6)}}$
C $P_0 = \frac{e^{(-0.03 \cdot 6)}}{584}$	

5

A bacteria population starts at a certain size. It declines continuously at 9% per month. After 6 months it has decreased to a population of 466 bacteria.

Rearrange the exponential equation to solve for for the starting population given this scenario?

A	B
$P_0 = \frac{466}{e^{(-0.09 \cdot 6)}}$	$P_0 = \frac{466}{e^{(\frac{-0.09}{6})}}$

6

A bird population starts at a certain size. It declines continuously at 7% per year. After 4 years it has decreased to a population of 604.

Rearrange the exponential equation to solve for for the starting population given this scenario?

A $P_0 = \frac{e^{(-0.07 \cdot 4)}}{604}$	B $P_0 = \frac{604}{e^{(\frac{-0.07}{4})}}$
C $P_0 = \frac{604}{e^{(-0.07 \cdot 4)}}$	

7

A bird population starts at a certain size. It declines continuously at 5% per quarter. After 9 quarters it has decreased to a population of 191.

Rearrange the exponential equation to solve for for the starting population given this scenario?

A $P_0 = \frac{191}{e^{(-0.05 \cdot 9)}}$	B $P_0 = \frac{191}{e^{(\frac{-0.05}{9})}}$
C $P_0 = \frac{e^{(-0.05 \cdot 9)}}{191}$	

8

A bird population starts at a certain size. It declines continuously at 6% per year. After 3 years it has decreased to a population of 584.

Rearrange the exponential equation to solve for for the starting population given this scenario?

A	B
$P_0 = \frac{584}{e^{(\frac{-0.06}{3})}}$	$P_0 = \frac{584}{e^{(-0.06 \cdot 3)}}$