

mobius

Exponential Function Solving - Decay (Continuous) Scenario to Rate



1

A whale population starts at 200. It declines continuously at a certain percent per year. After 7 years it has decreased to a population of 114 whales.

Solve for the rate given this scenario?

$$egin{aligned} \mathsf{A} & \mathsf{9}+r = -rac{e^{rac{P}{P_0}}}{t} & \mathsf{B} & \mathsf{3}+r = -rac{e^{rac{P}{P_0}}}{t} \end{aligned}$$

2

A bacteria population starts at 900. It declines continuously at a certain percent per week. After 7 weeks it has decreased to a population of 514 bacteria.

Solve for the rate given this scenario?

$$egin{aligned} \mathsf{A} & r = -rac{\mathsf{ln}}{P_0} & \mathsf{B} & \mathsf{1} + r = -rac{\mathsf{ln}}{P} & \mathsf{E} & \mathsf{In} & \mathsf{E} & \mathsf{In} & \mathsf{E} &$$

3

A radioactive material starts at an isotope concentration of 300ppm. It decays continuously at a certain percent per hour. After 5 hours it has decayed to an isotope concentration of 211ppm.

Solve for the rate of decay given this scenario?

$$egin{aligned} \mathsf{A} & \mathsf{5} + r = -rac{\mathsf{ln}\,rac{R_0}{R}}{t} \end{aligned} egin{aligned} \mathsf{B} & \mathsf{1} + r = -rac{\mathsf{ln}\,rac{R_0}{R}}{t} \end{aligned} \ & \mathsf{C} & r = -rac{\mathsf{ln}\,rac{R}{R_0}}{t} \end{aligned} egin{aligned} \mathsf{B} & \mathsf{1} + r = -rac{\mathsf{ln}\,rac{R_0}{R}}{t} \end{aligned}$$

4

A bird population starts at 800. It declines continuously at a certain percent per quarter. After 7 quarters it has decreased to a population of 426.

Solve for the rate given this scenario?

$$egin{array}{ccccc} \mathsf{A} & \mathsf{5}+r=-rac{e^{rac{P}{P_0}}}{t} & \mathsf{B} & \mathsf{6}+r=-rac{e^{rac{P}{P_0}}}{t} \ & \mathsf{7}+r=-rac{\mathsf{ln}rac{P_0}{P}}{t} & \mathsf{D} & r=-rac{\mathsf{ln}rac{P}{P_0}}{t} \ & \end{array}$$

5

A radioactive material starts at an isotope concentration of 300ppm. It decays continuously at a certain percent per day. After 7 days it has decayed to an isotope concentration of 197ppm.

Solve for the rate of decay given this scenario?

6

A toxin starts at a concentration of 400mg/L. It declines continuously at a certain percent per day. After 7 days it has decreased to a concentration of 228mg/L.

Solve for the rate given this scenario?

$r = -rac{In \; rac{C}{C_0}}{t}$	$oxed{egin{array}{c} B \ 9+r=-rac{e^{rac{C}{C_0}}}{t} \end{array}}$
$egin{aligned} extstyle{C} 2+r = -rac{\lnrac{C_0}{C}}{t} \end{aligned}$	$oxed{D4+r=-rac{Inrac{C_0}{C}}{t}}$

7

A toxin starts at a concentration of 800mg/L. It declines continuously at a certain percent per month. After 3 months it has decreased to a concentration of 709mg/L.

Solve for the rate given this scenario?

$oxed{A} r = -rac{Inrac{C}{C_0}}{t}$	$egin{aligned} B 9 + r = -rac{In \; rac{C_0}{C}}{t} \end{aligned}$
$7+r=-rac{\lnrac{C_0}{C}}{t}$	$egin{aligned} D \ 2 + r = -rac{e^{rac{C}{C_0}}}{t} \end{aligned}$

8

A whale population starts at 200. It declines continuously at a certain percent per year. After 3 years it has decreased to a population of 167 whales.

Solve for the rate given this scenario?

$egin{aligned} A + r = -rac{Inrac{P_0}{P}}{t} \end{aligned}$	$r=-rac{\lnrac{P}{P_0}}{t}$
$oxed{C} 9 + r = -rac{e^{rac{P}{P_0}}}{t}$	