Name ______________________

Exponential Function Solving - Decay (Continuous) Scenario to Value at Time

1

A bacteria population starts at 900. It declines continuously at 8% per year. After 6 years it has decreased to a certain population.

Solve for the final population given this scenario?

A $P = P_0 \cdot e^{(-r \cdot t)}$	B $1 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$
C $9 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$	D $6 + P = P_0 - e^{(-r \cdot t)}$

2

A bacteria population starts at 500. It declines continuously at 2% per week. After 7 weeks it has decreased to a certain population.

Solve for the final population given this scenario?

A $2 + P = P_0 - e^{(-r \cdot t)}$	B $P = P_0 \cdot e^{(-r \cdot t)}$
C $0 + P = P_0 - e^{(-r \cdot t)}$	D $4 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$

3

A bacteria population starts at 900. It declines continuously at 6% per month. After 3 months it has decreased to a certain population.

Solve for the final population given this scenario?

A $8 + P = P_0 - e^{(-r \cdot t)}$	B $7 + P = P_0 - e^{(-r \cdot t)}$
C $P = P_0 \cdot e^{(-r \cdot t)}$	

4

A bacteria population starts at 600. It declines continuously at 2% per month. After 8 months it has decreased to a certain population.

Solve for the final population given this scenario?

A $4 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$	B $5 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$
C $0 + P = P_0 - e^{(-r \cdot t)}$	D $P = P_0 \cdot e^{(-r \cdot t)}$

5

A radioactive material starts at an isotope concentration of 500ppm. It decays continuously at 4% per day. After 6 days it has decayed to a certain isotope concentration.

Solve for the final concentration given this scenario?

A $R = R_0 \cdot e^{(-r \cdot t)}$	B $4 + R = R_0 \cdot e^{\left(\frac{-r}{t}\right)}$
C $9 + R = R_0 - e^{(-r \cdot t)}$	D $8 + R = R_0 \cdot e^{\left(\frac{-r}{t}\right)}$

6

A whale population starts at 600. It declines continuously at 9% per year. After 5 years it has decreased to a certain population.

Solve for the final population given this scenario?

A $3 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$	B $6 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$
C $P = P_0 \cdot e^{(-r \cdot t)}$	D $1 + P = P_0 - e^{(-r \cdot t)}$

7

A bird population starts at 800. It declines continuously at 7% per quarter. After 2 quarters it has decreased to a certain population.

Solve for the final population given this scenario?

A $9 + P = P_0 - e^{(-r \cdot t)}$	B $2 + P = P_0 - e^{(-r \cdot t)}$
C $P = P_0 \cdot e^{(-r \cdot t)}$	D $6 + P = P_0 \cdot e^{\left(\frac{-r}{t}\right)}$

8

A whale population starts at 200. It declines continuously at 3% per year. After 8 years it has decreased to a certain population.

Solve for the final population given this scenario?

A $P = P_0 \cdot e^{(-r \cdot t)}$	B $5 + P = P_0 - e^{(-r \cdot t)}$
C $7 + P = P_0 - e^{(-r \cdot t)}$	