Name

Exponential Function Solving - Growth (Discrete, Mis-matched Time Units) Scenario to Time

1

A savings account starts with \$500. Each subsequent year it earns 8% in interest. After a certain number of quarters it has \$4,313.

How would you solve for the time given this scenario?

A $t = \frac{1}{4} \cdot \frac{\ln \frac{P}{P_0}}{\ln(1-r)}$	B $t = 4 \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$
C $t = \frac{1}{4} \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$	D $t = 4 \cdot \frac{\ln P \cdot P_0}{\ln(1+r)}$

2

A savings account starts with \$400. Each subsequent month it earns 8% in interest. After a certain number of years it has \$587.

How would you solve for the time given this scenario?

A $t = 12 \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$	B $t = \frac{1}{12} \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$
C $t = \frac{1}{12} \cdot \frac{\ln P \cdot P_0}{\ln(1+r)}$	

3

A savings account starts with \$300. Each subsequent year it earns 4% in interest. After a certain number of quarters it has \$657.

How would you solve for the time given this scenario?

A $t = \frac{1}{4} \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$	B $t = \frac{1}{4} \cdot \frac{\ln \frac{P}{P_0}}{\ln(1-r)}$
C $t = 4 \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$	

4

A savings account starts with \$400. Each subsequent month it earns 2% in interest. After a certain number of quarters it has \$468.

How would you solve for the time given this scenario?

A $t = \frac{1}{3} \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$	B $t = 3 \cdot \frac{\ln \frac{P}{P_0}}{\ln(1+r)}$
C $t = \frac{1}{3} \cdot \frac{\ln P \cdot P_0}{\ln(1+r)}$	

5

A credit card starts with \$500 of debt. Each subsequent quarter it grows by 4% in interest. After a certain number of months the debt has grown to \$1,139.

How would you solve for the time given this scenario?

A $t = \frac{1}{3} \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$	B $t = 3 \cdot \frac{\ln D \cdot D_0}{\ln(1+r)}$
C $t = 3 \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$	D $t = \frac{1}{3} \cdot \frac{\ln \frac{D}{D_0}}{\ln(1-r)}$

6

A credit card starts with \$800 of debt. Each subsequent quarter it grows by 9% in interest. After a certain number of years the debt has grown to \$1,036.

How would you solve for the time given this scenario?

A $t = 4 \cdot \frac{\ln \frac{D}{D_0}}{\ln(1-r)}$	B $t = 4 \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$
C $t = \frac{1}{4} \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$	

7

A credit card starts with \$500 of debt. Each subsequent quarter it grows by 7% in interest. After a certain number of years the debt has grown to \$859.

How would you solve for the time given this scenario?

A $t = 4 \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$	B $t = 4 \cdot \frac{\ln \frac{D}{D_0}}{\ln(1-r)}$
C $t = \frac{1}{4} \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$	

8

A credit card starts with \$300 of debt. Each subsequent quarter it grows by 6% in interest. After a certain number of months the debt has grown to \$1,019.

How would you solve for the time given this scenario?

A $t = \frac{1}{3} \cdot \frac{\ln \frac{D}{D_0}}{\ln(1-r)}$	B $t = 3 \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$
C $t = \frac{1}{3} \cdot \frac{\ln \frac{D}{D_0}}{\ln(1+r)}$	

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