



nelseen.barbosa001@umb.edu
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← 130, section 10, Spring 2020

INSTRUCTOR

Matthew Lehman

University of Massachusetts, Boston

Ch3.5 (Homework)

Current Score

QUESTION

1

2

3

4

5

6

7

8

9

10

11

12

13

POINTS

2/2

1/1

2/2

0/2

-/2

-/2

-/1

-/4

-/12

-/1

-/1

-/1

-/2



TOTAL SCORE

5/33

15.2%

Due Date

WED, MAY 20, 2020
6:30 PM EDT



Request Extension

Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

1.

2/2 POINTS

PREVIOUS ANSWERS

LARPCALCCC3 3.5.001.

MY NOTES

ASK YOUR TEACHER

Fill in the blanks.

An exponential growth model has the form _____, where $b > 0$.

- ☐ $y = \frac{a}{1 + be^{-rx}}$
- ☐ $y = a + b \ln x$
- ☐ $y = ae^{-bx}$
- ☒ $y = ae^{bx}$
- ☐ $y = ae^{-(x-b)^2/c}$

An exponential decay model has the form _____, where $b > 0$.

- ☐ $y = \frac{a}{1 + be^{-rx}}$
- ☐ $y = a + b \ln x$
- ☒ $y = ae^{-bx}$
- ☐ $y = ae^{-(x-b)^2/c}$
- ☐ $y = ae^{bx}$



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2.

1/1 POINTS

PREVIOUS ANSWERS

LARPCALCCC3 3.5.004.

MY NOTES

ASK YOUR TEACHER

Fill in the blank.

A logistic growth model has the form _____.

☐ $y = ae^{-(x-b)^2/c}$

☒ $y = \frac{a}{1 + be^{-rx}}$

☐ $y = a + b \ln x$

☐ $y = ae^{bx}$

☐ $y = ae^{-bx}$



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3.

2/2 POINTS

PREVIOUS ANSWERS

LARPCALCCC3 3.5.005.

MY NOTES

ASK YOUR TEACHER

Consider the following equation.

$$A = Pe^{rt}$$

(a) Solve for P .

 $P =$ Ae^{-rt} 

(b) Solve for t .

 $t =$ $\frac{\ln(A/P)}{r}$ **Need Help?**

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4.

0/2 POINTS

PREVIOUS ANSWERS

LARPCALCCC3 3.5.007.

MY NOTES

ASK YOUR TEACHER

Complete the table assuming continuously compounded interest. (Round your answers to two decimal places.)

Initial Investment	Annual % Rate	Time to Double	Amount After 10 Years
\$2000	9.5%	yr	\$ 15000 ✖

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5.

-/2 POINTS

LARPCALCCC3 3.5.009.

MY NOTES

ASK YOUR TEACHER

Complete the table assuming continuously compounded interest. (Round your answers to two decimal places.)

Initial Investment	Annual % Rate	Time to Double	Amount After 10 Years
\$700	%	$8\frac{1}{4}$ yr	\$

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6.

- /2 POINTS

LARPCALCCC3 3.5.011.

MY NOTES

ASK YOUR TEACHER

Complete the table assuming continuously compounded interest. (Round your answers to two decimal places.)

Initial Investment	Annual % Rate	Time to Double	Amount After 10 Years
\$	8.4%	yr	\$19,000

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7.

- /1 POINTS

LARPCALCCC3 3.5.013.

MY NOTES

ASK YOUR TEACHER

Determine the principal P that must be invested at rate $r = 4\%$, compounded monthly, so that \$500,000 will be available for retirement in $t = 9$ years. (Round your answer to the nearest cent.)

 $P = \$$

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8.

-/4 POINTS

LARPCALCCC3 3.5.015.

MY NOTES

ASK YOUR TEACHER

Determine the time necessary for P dollars to double when it is invested at interest rate r compounded annually, monthly, daily, and continuously. (Round your answers to two decimal places.)

$$r = 13\%$$

(a) annually

 yr

(b) monthly

 yr

(c) daily

 yr

(d) continuously

 yr

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9.

-/12 POINTS

LARPCALCCC3 3.5.017.

MY NOTES

ASK YOUR TEACHER

Complete the table for the time t (in years) necessary for P dollars to triple when interest is compounded continuously and annually at rate r . (Round your answers to two decimal places.)

(a) continuously

r	2%	4%	6%	8%	10%	12%
t						

(b) annually

r	2%	4%	6%	8%	10%	12%
t						

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10.

-/1 POINTS

LARPCALCCC3 3.5.021.

MY NOTES

ASK YOUR TEACHER

Complete the table for the radioactive isotope. (Round your answer to two decimal places.)

Isotope	Half-life (years)	Initial Quantity	Amount After 1000 Years
^{226}Ra	1599	9 g	g

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11.

-1 POINTS

LARPCALCCC3 3.5.033.

MY NOTES

ASK YOUR TEACHER

The number of bacteria in a culture is increasing according to the law of exponential growth. After 2 hours, there are 50 bacteria, and after 5 hours, there are 400 bacteria. How many bacteria will there be after 7 hours?

 bacteria

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12.

-1 POINTS

LARPCALCCC3 3.5.034.

MY NOTES

ASK YOUR TEACHER

The number of bacteria in a culture is increasing according to the law of exponential growth. The initial population is 260 bacteria, and the population after 8 hours is double the population after 1 hour. How many bacteria will there be after 3 hours? (Round your answer to the nearest whole number.)

 bacteria

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13.

-2 POINTS

LARPCALCCC3 3.5.037.

MY NOTES

ASK YOUR TEACHER

(a) The ratio of carbon 14 to carbon 12 in a piece of wood discovered in a cave is $R = 1/9^{16}$. Estimate the age of the piece of wood. (Round your answer to the nearest whole number.)

 years old

(b) The ratio of carbon 14 to carbon 12 in a piece of paper buried in a tomb is $R = 1/13^{11}$. Estimate the age of the piece of paper. (Round your answer to the nearest whole number.)

 years old

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