Solve the problem.

1) Which of the two rates would yield the larger amount in 1 year: 6.4% compounded quarterly or 6.3% compounded monthly? (Show work to support your answer)

1) _____

2) How long does it take $1125 to triple if it is invested at 8% interest, compounded monthly? Round your answer to the nearest tenth.

2) _____

3) Larry has $1900 to invest and needs $2400 in 13 years. What annual rate of return will he need to get in order to accomplish his goal? (Round your answer to two decimals.)

3) _____

4) The logistic growth model $P(t) = \dfrac{210}{1 + 20e^{-0.168t}}$ represents the population of a species introduced into a new territory after t years.

a) What is the carrying capacity and growth rate?   _____ _____

b) What is the initial population of the species?   _____

c) What will the population be in 30 years?   _____

d) In how many years will the population be 80?   _____

5) The half-life of radium is 1690 years. If 150 grams is present now, how long (to the nearest year) till only 80 grams are present?

5) _____

6) A thermometer reading 35°F is brought into a room with a constant temperature of 70°F. If   6) _____
the thermometer reads 44°F after 4 minutes, what will it read after being in the room for 10
minutes? Assume the cooling follows Newton's Law of Cooling.
(Round your answer to two decimal places.)

7) The size P of a small herbivore population at time t (in years) obeys the function   7) _____
$P(t) = 500e^{0.28t}$ if they have enough food and the predator population stays constant. After
how many years will the population reach 2500? (Round your answer to two decimal
places).

8) In a Psychology class, the students were tested at the end of the course on a final exam.
Then they were retested with an equivalent test at subsequent time intervals. Their average
scores after t months are given in the table.

Time, t (in months)	1	2	3	4	5
Score, y (in percentage)	86.2	85.7	85.4	85.2	85.0

Using a graphing utility, fit a logarithmic function $y = a + b \ln x$ to the data. Using the
function you found, estimate how long will it take for the test scores to fall below 84%.
Express your answer to the nearest month.

Function: _____   Time = _____

9) Cindy will require $65000 in 5 years to return to college to get an MBA degree. How much   9) _____
money should she ask her parents for now so that, if she invests it at 9% compounded
continuously, she will have enough for school? (Round your answer to the nearest
dollar.)

10) Five friends drove at an average rate of 60 miles per hour to a weekend retreat. On the way   10) _____
home, they took the same route but averaged 75 miles per hour. What was the distance
between home and the retreat if the round trip took 9 hours? (round your answer to the
nearest tenth of a mile) (IF NECESSARY)