Workshop Exercises for Week 6

Attempt the following workshop exercises. These are the exercises that are used in the workshop portion of the internal lectures. No solutions are available for these exercises. Answers to selected workshop exercises are included.

1. Graph the function \( y = f(x) = 5(3^x) \).

2. If \$5000 is invested at 8% compounded quarterly for 10 years, find
   (a) the compound amount at the end of 10 years
   (b) the compound interest

3. The number of bees in a colony is described by \( N = 500e^{0.03t} \) where time (\( t \)) is in months.
   (a) Graph the population over the next year.
   (b) How many bees should be expected in the colony in six months time if the model remains accurate?

4. Solve for \( x \): \( \log_3 x = 10 \)

5. Solve for \( x \): \( \log x 25 = 2 \)

6. Evaluating the following values using a calculator:
   a) \( \log_{12} \)
   b) \( \ln e \)
   c) \( \ln(100^2) \)
   d) \( 3 \log(8^{0.4}) \)

7. Solve for \( x \): \( \log_x (4x - 3) = 1 \)

8. Solve for \( x \): \( \ln(x + 8) = 3 \)
Answers

2. a) $11040.20
   b) $6040.20

3. b) 599 bees

4. $x = 59049$

5. $x = 5$

6. a) 1.07918125
   b) 1, c) 9.21034037
   d) 1.08370798

7. no solution

8. $x = e^8 - 8 = 12.08553692$