Workshop Exercises for Week 7

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. A supply equation is \( p = \log \left( 10 + \frac{q}{4} \right) \) where \( p \) is the price of one unit in dollars and \( q \) is the number of units. At what price \( p \) will the manufacturer supply 200 units?

2. Solve without using a calculator: \( \log_2 2^9 \)

3. Solve for \( x \): \( 2^{\log_2 x + \log_2 4} = 5 \)

4. A demand equation is \( q = 8 - 3^p \).
   (a) Solve for \( p \).
   (b) Evaluate \( p \) to two decimal places when \( q = 6 \).

5. Solve for \( x \): \( 5e^{3-x} - 1 = 29 \)

6. Solve for \( x \): \( \log_x 4 = 2^5 \)

7. Solve for \( y \): \( \log y - \log 5 - 1 = 3 \)

8. Solve for \( t \): \( 2^{3t-1} = 8^{t+1} \)

9. Solve for \( z \): \( \log_4 (z + 7) - 3\log_4 2 = \log_4 z \)
Answers
1. $1.78
2. 9
3. $x = \frac{5}{4}$
4. a) $p = \frac{\log(8 - q)}{\log 3}$, and b) $p = 0.63$
5. $x = 3 - \ln 6 = 1.208241$
6. $x = 1.04427378$
7. $y = 10^{4+\log 5} = 50,000$
8. no solution
9. $z = 1$