# Chapter 1.4: Logarithm Exercises

## Calculus I

### College of the Atlantic. Fall 2014

1. Answer the following questions without using a calculator. You should be able to explain why the answers are what they are.

   (a) What is $\log(1000)$?

   (b) What is $\log 10^4$?

   (c) What is $\log(1)$?

   (d) What is $\log(-10)$?

   (e) What is $\log(0)$?

   (f) What is $\log(0.1)$?

   (g) $\log(5000)$ is between what two integers?

   (h) What is $\ln(e)$?

   (i) What is $\ln(1)$?

2. Use your calculator to answer the following questions:

   (a) What is $\log(200)$?

   (b) What is $\log(0.64)$?

   (c) What is $\ln(2)$?

3. Let the amount of air pollution in a room be given by

$$P(t) = 52000(0.8)^t \, . \tag{1}$$

   At what time $t$ is the amount of air pollution equal to $10,000$?

4. Solve for z:

   (a)

$$10^z = 20 \, . \tag{2}$$

   (b)

$$2^{3z} = 20 \, . \tag{3}$$

   (c)

$$2^z = 3z \, . \tag{4}$$