

Logarithm Exercises

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 $\log(0)$?
- (e) What is $\log(0.1)$?
- (f) $\log(5000)$ is between what two integers?

2. 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?

3. Solve for z :

(a) $10^z = 20 . \tag{2}$

(b) $2^{3z} = 20 . \tag{3}$

(c) $2^z = z + 4 . \tag{4}$