

Chapter 1.4: More Logarithm Exercises

Calculus I

College of the Atlantic. September 30, 2024

1. Solve for x :

$$10 = 7^x . \quad (1)$$

$$10 = 2(3^x) . \quad (2)$$

2. Solve for x :

$$2^x = 3x . \quad (3)$$

Oh wait. We decided on Thursday that this can't be solved using algebra. Does it really have no solutions, or is it just that we can't use algebra to find them? Make rough plots of 2^x and $3x$ on the same axes. How many solutions do you think there are to Eq. (3).

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

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

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

(c) What is $\ln(e^{17})$?

4. Use your calculator to answer the following questions:

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

(b) What is $e^{-2.5}$?

5. Suppose that $f(t) = 100e^{-kt}$ and you know that $f(5) = 20$. Solve for k .

6. Write $f(t) = 100(2^t)$ in the form P_0e^{kt} .