Graphing Logarithmic Functions

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1 Administrivia

Collect homework.

Announcements

Assignment

Read 3.11. Online quiz.

From Last Time

Introduction to Logarithms.

2 Introduction

Sketch each of the following graphs:

1. $10^x$. Important points? ($x = 0, 1$)

2. $(\frac{1}{10})^x$.

How can we obtain this from the previous graph?
3. $\log x$. Important points? $(x = 1, 10)$

   How do we obtain this from previous graphs?

4. $\log_{\frac{1}{m}} x$

   How do we obtain this from previous graphs?

How are $e^x$ and $10^x$ related? How about $\ln x$ and $\log x$? Will this be true of any two exponentials and any two logarithms?

Important characteristics for $\log_b x$, $b > 0$, $b \neq 1$:

1. $(1, 0)$
2. $(b, 1)$
3. Vertical asymptote at $x = 0$.
4. Domain is $x > 0$.
5. Range is all reals.
6. One-to-one.

Why $b \neq 1$?

Sketch:

1. $\ln(x^2 - 3x - 4)$
2. $\log_2(x^2)$. Why parentheses?

   Not the same as $2\log_2 x$. Why?

2.1 Class Exercise

Pp. 218–219: 2 a–d; 4 a–d.