

## QUIZ 9 - MATH 111

Friday, November 15

YOUR NAME: \_\_\_\_\_

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Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [3 points] Compute the following logarithms without using calculators.

$$\log_3 81 =$$

$$\log_2 \frac{1}{8} =$$

$$\log_9 \frac{1}{3} =$$

2. [3 points] Use a small table of values to sketch the graph of  $y = \log_{\frac{1}{2}} x$ .

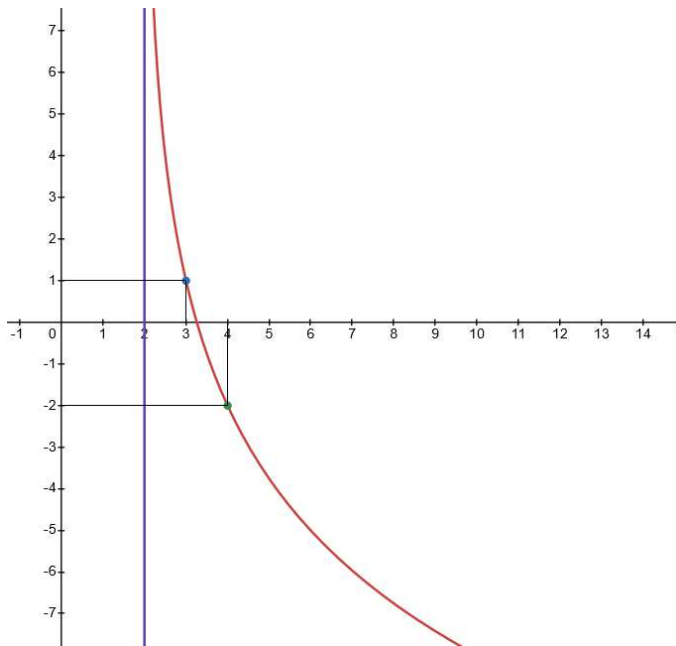
3. [3 points] Suppose we start with the function  $y = \ln x$ . Detail the transformations needed to get to  $f(x) = 3 \ln(x + 5) - 7$ .

$$y = \ln x \longrightarrow ( \quad \quad \quad )$$

$$\longrightarrow ( \quad \quad \quad )$$

$$\longrightarrow y = 3 \ln(x + 5) - 7 \quad ( \quad \quad \quad )$$

4. [5 points] Find a possible formula for the logarithmic function with base  $b = \frac{1}{2}$  whose graph is shown in the figure. (Steps should be as shown in class.)



Step 1:

Step 2:

Step 3:

Step 4: