

Reading Questions for Section 4.1

(15 pts)

Name _____

Due Date: _____

- (1) 1. The section begins with recalling the graphical solution to $10^t = 2500$ from **Section 3.2**. In a similar way, solve $10^t = -100$ graphically by sketching the graph $y = 10^t$ and $y = -100$ and see where they intersect, if at all. What does this say about the solution to $10^t = -100$?

2-6. Complete the blanks after reading the box right before Example 1.

(1) 2. If x is a positive number, $\log x$ is the _____ of 10 that gives us x .

(1) 3. This means that $10^{\log x} = \underline{\hspace{2cm}}$.

(2) 4. For example, because $10^{2.24} \approx 173.78$, then $\log 173.78 \approx \underline{\hspace{2cm}}$ since the number _____ is the exponent we raise 10 to in order to get 173.78.

(Both can be checked with a graphing calculator. You ought to do this.)

(2) 5. In Example 2c in **Section 4.1**, we can write $10^{0.8} \approx 6.3096$ in exponential form:

$\log(\underline{\hspace{2cm}}) \approx \underline{\hspace{2cm}}$.

(1) 6. In Example 3f, the expression $\log(-100)$ is the number we raise 10 to in order to get -100 .

By your answer to Question 1 on this handout, what is the result? _____

(1) 7. In **Section 4.1 Example 5**, the section recalls the solution to the equation

$100(2)^t = 337,000,000$ which was solved graphically in **Section 3.3 Example 2**

This solution determines the date that the fine imposed on the city of Yonkers would have wiped out the city's entire annual budget. To which date does this solution correspond?

(Read **Section 3.3 Example 2** carefully)

- A. Feb 14, 1988
- B. August 2, 1988
- C. August 21, 1988
- D. August 22, 1988
- E. August 24, 1988

(1) 8. Compare the box titled **Properties of the Common Logarithm** before **Example 5** with the box on the next page titled **Properties of the Natural Logarithm**. Then choose the best answer.

- A. The properties are the same, except where there is an e in the box titled **Properties of the Common Logarithm**, there is a **10** in the box titled **Properties of the Natural Logarithm** and where there is an **ln** in the box titled **Properties of the Common Logarithm**, there is a **log** in the box titled **Properties of the Natural Logarithm**.
- B. The properties are the same, except where there is a **10** in the box titled **Properties of the Common Logarithm**, there is an e in the box titled **Properties of the Natural Logarithm** and where there is an **log** in the box titled **Properties of the Common Logarithm**, there is an **ln** in the box titled **Properties of the Natural Logarithm**.
- C. After learning the properties of the common logarithm, you must learn entirely different properties for the natural logarithm.

(1) 9. In Example 6a, what is the first step used to solve the equation $5e^{2x} = 50$?

- A. Take natural logs of both sides
- B. Divide both sides by 2
- C. None of these

(1) 10. The text compares $\log 5x^2$ and $2 \log 5x$. Are these the same for all positive x ? A. Yes

B. No

(3) 11. Use a calculator to find each to 3 decimal places:

$$\frac{\log 7}{5} \approx \boxed{\hspace{2cm}}$$

$$\log \frac{7}{5} \approx \boxed{\hspace{2cm}}$$

$$\frac{\log 7}{\log 5} \approx \boxed{\hspace{2cm}}$$