

Unit 7 Exponential and Logarithm Group Work
PCHA 2022-23 / Dr. Kessner

No calculator. Have fun!

1. Evaluate the following:

a. $\log_2(32)$

b. $\log_{10}(10000)$

c. $\ln(e^5)$

d. $e^{\ln 10}$

2. Suppose a bacterial colony has an initial population of 500 and has a population of 4000 at $t = 9$ hours.

a. Model the population $P(t)$ as an exponential in the following form. (i.e. find P_0 and k). Check your work.

$$P(t) = P_0 e^{kt}$$

b. What is the doubling time of the colony?

c. Model the population as an exponential in the following form. What does T represent?

$$P(t) = P_0 2^{t/T}$$

3. Graph the following:

$y = 2^x$ and $y = \log_2 x$ on the same graph.

$y = 10^x$ and $y = \log_{10} x$ on the same graph.