

Math 120 – Ch 10 Skills Supplement Test Prep – Dr. Loveless

This worksheet is meant to supplement our in-class discussion and to help you begin the Chapter 10 homework, which focuses on computational review of exponential skills. These skills will be used extensively in Chapters 11 and 12.

As always discuss with your TA if you want to discuss more homework and/or if you want to spend more time on this worksheet. In any case, please try to finish as much of the chapter 10 homework as possible today!

Participation Code: Please remember to ask your TA for the participation code for today and don't forget to enter it in the corresponding Canvas quiz. There is a second question in the participation quiz which is just for fun enter anything for credit on that one.

If you open the chapter 10 homework, you will see that all of the problems here come from that homework, so good to ask about them now!

Problem 1 (Calculator Check)

Use a calculator to approximate each to at least four decimal places, then compare with classmates

(a) $2\sqrt{7} + 5e^2$

(b) $4(3)^{\pi^2}$

Problem 2 (Rewrite in Standard Exponential Form)

Rewrite each in the form $y = ab^x$.

(a) $y = 3 \cdot 4^{-\frac{x}{2}}$

(b) $y = \frac{2}{3^{3+x}}$

Problem 3 (Exponential Growth Model computation)

A yeast colony begins with 10^{61} cells at time $t = 0$, and grows according to the model $y = f(t) = 10^6 e^{\{0.495105t\}}$ where y is in cells and t is in hours.

- (a) How many cells are present after one hour?
- (b) Does the population double every 1.4 hours? Justify using the model.

Problem 4 (How “fast” is exponential growth - an exploration problem like homework)

You place 1 dime on square 1 of a chessboard, 2 on square 2, 4 on square 3 and so on... doubling each time. A chessboard has 64 squares.

- (a) How many dimes are on square 10?
- (b) Write a formula for the number of dimes on square n .
- (c) How many are on square 64?
- (d) If each dime is 1 mm thick, how tall is the stack in km?
- (e) Compare this to the Earth–Sun distance (~150 million km). What does this tell you about exponential growth?

Again, please ask other questions from the chapter 10 homework, no is a good time to get ahead!