

Math-8 Exam Chapter 4

Name: _____

This is a take-home exam. You may use your books, notes, and calculator; however, you are not allowed to work together or get outside help. Show all work; there is no credit for guessed answers. All values should be exact (no decimals) unless you are specifically asked for an approximate value answer. All domains and ranges should be expressed in interval notation.

Do the exam on the front side only of 8×11 college rule or graph paper. Staple all pages and make sure that your name is on the first page. Treat this like you would a term paper!

Your final version is due at 9:30am, Saturday, December 17, just prior to the final exam in room MH324. Late papers or papers that do not meet the submission guidelines will not be accepted.

- 1). Consider the following exponential function:

$$y = 2e^{-x} - 3$$

- What are the x-intercepts (if any)?
 - What are the y-intercepts (if any)?
 - Where is the horizontal asymptote (if any)?
 - Sketch the graph. Be sure to label all key points and asymptotes for full credit.
 - Determine the inverse function.
- 2). Take the natural log of both sides and fully expand the result. There should be *no* exponents left in your answer.

$$y = \frac{\sqrt{(x+1)e^x}}{x(x-3)}$$

- 3). Given the following:

$$\log_b 2 = 0.4307$$

$$\log_b 3 = 0.6826$$

$$\log_b 7 = 1.2091$$

calculate $\log_b 126$ (without determining the base b).

- 4). Some archaeologists are digging at what appears to be a pre-Columbian human campsite in California. They find some animal bones with human teeth marks on them. Upon carbon-14 analysis, it is found that the bones have 75% of their original C^{14} . About how old are the bones, and hence the campsite? The half-life of C^{14} is 5730 years.