Math 130 - Test #3 Study Guide

Fall 2011, David Beydler

Test #3

- Date: Wednesday, November 23, 2011
- Will cover sections 4.1-4.6, 5.1, 5.2, 5.6, and 5.7
- Same as quizzes – no calculators (this includes cell phones), notes, or books.
- Don't forget that the **third batch of homework is due at the test**! This includes all of the sections that the test covers: 4.1-4.6, 5.1, 5.2, 5.6, and 5.7

Here are <u>some</u> of the basic formulas, equations, and concepts you'll want to know:

- (4.1) One-to-one: if $a \neq b$, then $f(a) \neq f(b)$. (Or, if $f(a) = f(b)$, then $a = b$.)
- (4.1) Horizontal Line Test
- (4.1) $f(x)$ and $g(x)$ inverse functions if both one-to-one, $f(g(x)) = x$, $g(f(x)) = x$
- (4.2) Graphing exponential functions
- (4.3) Graphing logarithmic functions
- (4.3) $\log_a xy = \log_a x + \log_a y, \quad \log_a \frac{x}{y} = \log_a x - \log_a y, \quad \log_a x^r = r \log_a x$
- (4.3) $a^{\log_a x} = x, \quad \log_a a^x = x$
- (4.4) $\ln x = \log_e x, \ \log x = \log_{10} x$
- (4.4) Change-of-Base Theorem: $\log_a x = \frac{\log_b x}{\log_b a}$
- (4.5) Solving exponential and logarithmic equations
- (4.6) Finding doubling/tripling time for continuously compounded investments
- (5.1, 5.2) Solving two- and three-variable systems of linear equations via the substitution and elimination methods, as well as the Gauss-Jordan method (using matrices)
- (5.1) Consistent: one solution, inconsistent: no solutions, dependent: infinitely many solutions
- (5.6) Graphing systems of inequalities
- (5.6) Solving linear programming problems
- (5.7) Adding, subtracting, multiplying matrices

I'll give you the following formulas if you need them:

- (4.2) Compound interest: $A = P \left(1 + \frac{r}{n}\right)^{tn}$
- (4.2) Continuous compound interest: $A = Pe^{rt}$

Extra Credit!

- If you write up the answers to all of the review exercises listed below, and hand them in at the test, you can earn up to 1% extra credit towards your overall grade (depending on neatness and completeness)!
- Review exercises:
  - Chapter 4: p.487 #1-7 odd, 11-23 odd, 27, 28, 35-61 odd, 67
  - Chapter 5: p.597 #1-11 odd, 15, 17, 23-29 odd, 59-75 odd (for 15, 17, and 29, write each system, but don't solve it)

How to Study

- To study, I'd recommend doing the following in order:
  - Homework (since you'll get credit for this)
  - Review Problems (since you'll get extra credit)
  - Study quizzes
  - Study lecture notes
- That said, while working on the homework and review problems, you might want to refer to the lecture notes and/or book if you get stuck somewhere.
- Finally, please visit my office hours if you need help. If you can't make it to my office hours, then feel free to e-mail me with any questions. For reference, here are my office hours and e-mail address:
  - Location: 61-1626 (Building 61, Room 1626)
  - Mon 1-4pm
  - Tues 4:30-5:30pm
  - Wed 3-4pm
  - Thurs 12-1pm
  - E-mail address: dbeydler@mtsac.edu