

# Math 51 – Final Exam Study Guide

Fall 2014, Prof. Beydler

## Final Exam

- Date: Monday, December 8, 2014 from 10:30am to 1:00pm
- Will cover almost all sections in this class.
- The test will start at 10:30am, and you'll have 2 hours and 30 minutes to finish it.
- There will be 2 parts to the final exam:
  - Part 1: No calculators allowed. This part will be short.
  - Part 2: Scientific calculator allowed.
- When you're finished with Part 1, turn it in and I'll give you Part 2.
- No notes or books during the test.
- Please visit my office hours if you need help. If you don't understand something, don't be embarrassed to stop by—I'm very patient. If you can't make it to my office hours, then feel free to e-mail me with any questions: [dbeydler@mtsac.edu](mailto:dbeydler@mtsac.edu) Also, don't forget to visit the MARC and get extra credit for doing so! (see syllabus for details)

## Not on the test:

- Chapter 1
- 5.3 (scientific notation)
- 7.8 (variation)

## Some of the stuff on the test:

- Slope:  $m = \frac{y_2 - y_1}{x_2 - x_1}$
- Standard form:  $Ax + By = C$
- Slope-intercept form:  $y = mx + b$
- Point-slope form:  $y - y_1 = m(x - x_1)$
- Horizontal lines:  $y = k$
- Vertical lines:  $x = k$
- $a^m \cdot a^n = a^{m+n}$
- $\frac{a^m}{a^n} = a^{m-n}$
- $(a^m)^n = a^{mn}$
- $(ab)^n = a^n b^n$
- $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$
- $a^0 = 1$
- $a^{-n} = \frac{1}{a^n}$
- $\frac{1}{a^{-n}} = a^n$
- $\frac{a^{-m}}{b^{-n}} = \frac{b^n}{a^m}$

- $\left(\frac{a}{b}\right)^{-m} = \left(\frac{b}{a}\right)^m$
- $A^2 + 2AB + B^2 = (A + B)^2$
- $A^2 - 2AB + B^2 = (A - B)^2$
- $A^2 - B^2 = (A + B)(A - B)$
- Pythagorean Theorem (for right triangles only):  $(leg)^2 + (leg)^2 = (hyp)^2$
- $d = rt$  (and the related  $t = \frac{d}{r}$  and  $r = \frac{d}{t}$ )
- Distance formula:  $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
- $\sqrt{a} \cdot \sqrt{b} = \sqrt{ab}$  and  $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$
- $a^{1/n} = \sqrt[n]{a}$
- $a^{m/n} = \left(\sqrt[n]{a}\right)^m$
- $a^{-m/n} = \frac{1}{a^{m/n}}$
- If  $x = k^2$ , then  $x = \sqrt{k}$  or  $x = -\sqrt{k}$ .
- Quadratic Formula:  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

### Formulas given on test:

- $A^3 + B^3 = (A + B)(A^2 - AB + B^2)$
- $A^3 - B^3 = (A - B)(A^2 + AB + B^2)$

### Extra Credit!

- If you write up the answers to all of the review exercises (see Final Exam Review Exercises on the class website), and hand them in at the test, you can earn up to 3% extra credit towards your test (depending on neatness and completeness)! Note that these review exercises don't necessarily cover everything.
- If you go to the MARC/LAC for 4 hours between Test #3 and the Final Exam, you'll get 1% extra credit towards the Final Exam.