# Math 130 - Test #1 Study Guide

Fall 2011, David Beydler

**Test #1**

- Date: Wednesday, September 28, 2011
- Will cover sections 1.2, 1.5-1.7 and 2.1-2.6
- Same as quizzes – no calculators (this includes cell phones), notes, or books.
- Don't forget that the **first batch of homework is due at the test**! This includes all of the sections that the test covers: 1.2, 1.5-1.7 and 2.1-2.6

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

- Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
- Pythagorean Theorem: $a^2 + b^2 = c^2$
- 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: $y = b$
- Vertical lines: $x = a$
- parallel ↔ same slope
  (also two vertical lines are parallel)
- perpendicular ↔ slopes are negative reciprocals
  (also, vertical and horizontal lines are perpendicular)
- Distance formula: $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
- Midpoint formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
- Center-radius form for circles: $(x - h)^2 + (y - k)^2 = r^2$
- Basic functions: $f(x) = x,\ x^2,\ x^3,\ \sqrt{x},\ \sqrt[3]{x},\ |x|,\ [\![x]\!]$
- $f(x) + c$ translates up
  $f(x) - c$ translates down
  $f(x - c)$ translates right
  $f(x + c)$ translates left
  $cf(x)$ stretches vertically (if $c > 1$), or shrinks vertically (if $0 < c < 1$)
  $f(cx)$ stretches horizontally (if $0 < c < 1$), or shrink horizontally (if $c > 1$)

$-f(x)$ reflects about $x$-axis
$f(-x)$ reflects about $y$-axis

- Symmetric about $y$-axis if replacing $x$ with $-x$ doesn't change the equation.
  Symmetric about $x$-axis if replacing $y$ with $-y$ doesn't change the equation.
- $f(x)$ is even if $f(-x) = f(x)$
  $f(x)$ is odd if $f(-x) = -f(x)$

**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 1: p.170 #9-17 odd, 37-45 odd, 51-99 odd, 103
  - Chapter 2: p.292 #1, 3, 7-69 odd, 77

**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