For more information and practice, see the blog and the Piazza discussion board!

Instructions: These problems are for you to use to test yourself, **after** you have practiced with the routine homework assignments, to see how ready you are for Test 1. They are not meant as a substitute for regular and diligent practice!

Do the following problems as if you were taking a test: without notes or textbook, and give yourself a time limit as stated at the start of each self-test. At the end of that time, check your answers against the answers which will be posted to the blog and/or Piazza: then review as needed before you repeat the self-test. References for review will also be given

Self-Test 1: allow 60 minutes

1) Solve the equation. Leave your answers in the form of rational numbers in lowest terms (that is, not decimals!).
$|x - 5| = 3$

2) Solve the inequality using the "test-point" method. Give your answers in three forms: draw the graph on the real line, then give the solutions in interval form and in inequality form.
$|x - 5| \leq 2$

3) Find the domain of each of the following functions

a) $f(x) = x^2 - 3x$

b) $f(x) = \sqrt{x - 3}$

c) $f(x) = \frac{x-2}{x+5}$

4) Find the equation of the line which passes through the points $(-1, 4)$ and $(2, -2)$ and put it in slope-intercept form: reduce fractions to lowest terms (do not use decimals).

5) Compute and simplify the difference quotient $\frac{f(x+h)-f(x)}{h}$ for the function $f(x) = 3x - 2x^2$

Self-Test 2: allow 60 minutes

1) Solve the equation. Leave your answers in the form of rational numbers in lowest terms (that is, not decimals!).
$|4x - 5| = 12$

2) Solve the inequality using the "test-point" method. Give your answers in three forms: draw the graph on the real line, then give the solutions in interval form and in inequality form.
$|x + 2| > 2$

3) A function $A(x)$ is defined as follows:

$$A(x) = \begin{cases} x - 3 & \text{if } x \leq 5 \\ 2x + 1 & \text{if } x > 5 \end{cases}$$

Find each of the following values:
$A(0) =$
$A(5) =$
$A(10) =$
What is the domain of A(x)?

item[4)] For the function $f(x) = \sqrt{x - 5}$, find the value of each of the following. Simplify your answers as much as possible but do not use decimals.

a) $f(9)$

b) $f(5)$

c) $f(0)$

d) $f(a + h)$

e) $f(a)$

f) $f(a + h) - f(a)$

g) $\frac{f(a+h)-f(a)}{h}$

5) Give the formula for the function g(x) whose graph is the same as the graph of $f(x) = \sqrt{x}$ but shifted to the left by 3 units and down by 2 units.