Math 201, Fall 2015

Review/Diagnostic Homework Assignment: Algebra & Trigonometry Review

Answer or solve each of the following. Find *exact* answers, *not* decimal approximations! Write out all necessary work, and simplify your answers as much as possible. Do *not* use a calculator or a computer for any of these problems.

If you have trouble remembering how to do some of these problems, you may wish to consult Chapter 1 and/or Appendix D (trigonometry) of the textbook. Or, drop by my office (DH 108) to ask for help!

This assignment should be completed - or, at the very least, problem areas should be identified and addressed - by Tuesday, September 8.

1. If $f(x) = x^2 + 4x$, evaluate and simplify the expression $\dfrac{f(3+h) - f(3)}{h}$.

2. Find the measure of each of the following angles.

    (a) What is the measure, in radians, of a $15°$ angle?

    (b) What is the measure, in degrees, of a $\dfrac{3\pi}{5}$ radian angle?

3. Find an equation for the line through the points (-4,7) and (2,15). Write your answer in the form $y = mx + b$.

4. Find an expression for $g^{-1}(x)$ if $g(x) = \dfrac{2}{x - 2}$.

5. Find the *exact* value of $\log 40 - \log 8 + \log 20$. Note that "log" denotes the common base-10 logarithm. (Reminder: do *not* use a calculator!)

6. Let $f(x) = \ln x$ and $g(x) = x^2$. Find an algebraic *expression* for each of the following compositions of functions, and also find the *domain* of each.

    (a) $g \circ f$
    (b) $f \circ g$
    (c) $f \circ f$

7. Solve the equation: $10e^{0.02t} = 80$.

8. Simplify: $\sqrt{20} + \sqrt{45} - \sqrt{80}$. (Hint: first simplify each of the radicals, then combine them.)

9. Find all values of t in the interval $-2\pi \le t \le 2\pi$ such that $\cos t = \dfrac{1}{2}$.

10. Rationalize the denominator, then simplify: $\dfrac{1 + 2\sqrt{2}}{3 - \sqrt{2}}$.