MAT 1340 Week 6 EXTRA Written Assignment
points Covers Section 2.6

2.6 – Transformations of Functions

Be sure to follow College Algebra formatting guidelines in your work. We will be doing a lot more with graphing techniques in future weeks.

NEATNESS COUNTS. Maybe do a couple drafts before submitting...

1. (10 pts) Transform the graph of $f(x)=\sqrt{x}$ to the graph of $g(x)=-4\sqrt{-5x-20}+64$, by the methods of my old Writing Project #2:

   a. Library of Basic Functions
      i. Notes (See Page 6 for Square-Root Function)
      ii. Square-Root Function Video (and all even-indexed roots).
   b. Stretching, Shrinking, Reflecting, and Shifting Basic Functions
      i. Notes on Basic Moves
      ii. Video on Basic Moves
      iii. Notes on Combining the Moves
      iv. Videos on Combining the Moves
         1. Method 1 – Preferred by Algebra Students
         2. Method 2 – Preferred by Trigonometry and Calculus Students
   c. There are numerous examples of Square-Root Functions in Spring, 2016 Writing Project #2. I notice that 8 years ago, the Method 1 and Method 2 were reversed.

      The difference between the two methods is that the Method 1 in the videos above is the student-preferred method, which does the horizontal shift before the horizontal stretch/shrink/reflect. Less fractions.

      Method 2 in the above is the teacher-preferred method, which does the horizontal stretch/shrink/reflect, first, and then it does the horizontal shift.
      i. Spring, 2016 Writing Project #2 (Check out all the square root examples!)
      ii. Spring, 2016 Writing Project #2 Solutions

2. (5 pts Bonus) Find the *exact* *x*- and *y*-intercepts of $g(x)$ from #1. Include them in your final graph.

3. (10 pts) Sketch the graph of $g(x)=\dfrac{-4}{(-5x-20)^3}+64$ by transforming a basic function. The basic function is $f(x)=\dfrac{1}{x^3}$, which is described on Page 9 on the Library of Basic Function Notes, which is included with the reciprocal function as far as its basic shape goes. See Reciprocal Function Video, which covers . $\dfrac{1}{x},\dfrac{1}{x^3},\dfrac{1}{x^5},\ldots,\dfrac{1}{x^{2n+1}}$, i.e., all the reciprocals of odd-powered power functions.

   A more complete set of resources for graphing by transformations is here: Writing Project #2 Notes and Videos. I've linked you to specific pages of notes and specific videos for the exercises I assigned, but there are lots more basic functions in the Basic Functions Notes and Videos.