Tutorial Worksheet, 02/09/2016

Instructions: Please work in groups of 3 or 4 students. Please work with students who will attend the same recitation section. You do not turn this worksheet in at the end of class; instead, attendance will be recorded so that you get credit for participating in this activity.

02/09: Functions.

Please use this recitation period to work through Sections 2.1–2.4 and 2.6–2.8 in the textbook. The following exercises are suggested. Please discuss the solution to these problems with the other members of your group. Your LA will offer assistance as needed. You will not have enough time to complete all of these exercises. This is an opportunity to spend some in-class working through textbook exercises you would ordinarily have to solve at home. We can discuss the solutions to these problems on Piazza.

Exercises.

1. What is a piecewise function? Give an example of a piecewise function. (Section 2.1)

2. What is a function? What is the textbook's definition of a function in terms of ordered number pairs? (Definition 2.2.3) What is a simple graph? Does every simple graph define a function? Does every function define a simple graph? (Section 2.2)

3. Solve Exercises 2.2.1 and 2.2.3–2.2.5.

4. Discuss Exercises 2.3.3 and 2.3.4 with the other members of your group. (These exercises are puzzles. Don't let the LAs tell you the answers until you've tried hard to figure them out on your own.)

5. Solve Exercises 2.3.6 and 2.3.7.

6. What is a polynomial? How do you determine the degree of a polynomial? What are the coefficients of a polynomial? (Section 2.4)

7. The function $f(x) = x^5(x-1)^6(x+1)^7$ is a polynomial because when you expand the expression $x(x-2)^3(2x+3)^4$, it has the form described in the *definition* of what it means to be a polynomial. What is the degree of $f(x)$? What is the constant coefficient of $f(x)$? What is the leading coefficient of $f(x)$? What is the coefficient of the degree one term of $f(x)$?

8. What is the inverse of a function? What is the textbook's definition of the inverse of a function? How can you tell if a graph is the graph of an invertible function? (Section 2.6)

9. Solve Exercises 2.6.1, 2.6.3–2.6.5, 2.6.8, 2.6.12, and 2.6.13.

10. What is the domain of $H(x) = F(G(x))$ in terms of the domains of the functions $F(x)$ and $G(x)$? (Section 2.7)

11. Solve Exercises 2.7.5, 2.7.6, 2.7.9, and 2.7.13.

12. What is a period function? What is the textbook's definition of a periodic function? (Section 2.8)

13. Solve Exercises 2.8.1, 2.8.2, 2.8.4, 2.8.7, 2.8.8, and 2.8.11.