Honors Calculus Summer Assignment 2022-2023 School Year

Complete both Part I and Part II

Part I

Go to the website: www.math.buffalo.edu/rur/rurci3.cgi

Complete the exercises online (except the ones on Greek Letters). **Copy down two problems from each section and write down the step-by-step solution.**

Part II

Please complete the following assignments over the summer.

All of the pages refer to the textbook we will be using this year: Larson, *Calculus with Precalculus: A One Year Course.,* Brooks/Cole, Boston, 2012. (I have included the problems on the next page as well).

Page 12 (Solving Equations): 22, 30, 48, 60, 70.

Page 24 Inequalities: 80, 82

Page 59 Linear Equations in Two variables: 56, 68.

Page 479: Exponential Functions: 68

Page 488-489: Logarithmic Functions 8, 16, 24, 86

Page 495: Properties of Logarithms: *46, 68*

Page 587: Right Angle Trigonometry: 8, 14

Page 606: Graphs of Sine and Cosine Functions: 6, 32

(These problems are typed on the pages that follow this one).

It is suggested that you spend one week per topic. It will make reviewing easier for you and will be more helpful to you, rather than doing all the problems right before they are due.

Due date: 2nd full day of Classes. This will count for a grade. Please write neatly and be sure to show all of your work.

If you have any questions, please contact me at: sconnolly@johncarroll.org.

Have a good summer,

Mr. Connolly

Here are the problems referred to on the previous page from the textbook authored by Larson.

Page 12: Solving Equations

22. Solve the equation and check your solution:

$$\frac{x}{5} - \frac{x}{2} = 3 + \frac{3x}{10}$$

30. Solve the equation and check your solution:

$$\frac{15}{x} - 4 = \frac{6}{x} + 3$$

48. Solve by factoring:

$$4x^2 + 12x + 9 = 0$$

60. Solve by taking square roots:

$$(x + 13)^2 = 25$$

70. Solve by "completing the square":

$$x^2 + 8x + 14 = 0$$

Page 24: Solving Inequalities:

Solve the inequality and graph the solution set.

80. $|2x + 9| > 13$

82. $\frac{1}{2}\,|x + 1| \leq 3$

Page 59: Linear Equations in Two Variables:

56. Find the slope- intercept form of the equation of the line that passes from the given point and has slope "m." Then, sketch the graph of the line.

$$(8,2), m = \frac{1}{4}$$

68. Find the equation of the line passing through points $(-1,4) and\ (6,4)$. Write the equation in slope intercept form. Then, sketch the graph of the line.

Page 479: Problems Involving Exponential Functions.

68. The number of computers "V" that are infected by a computer virus can be determined by the function: $V(t) = 100e^{4.5602t}$, where "*t*" represents the time in hours. Find the number of computers infected after: (a) 1 hour, (b) 1.5 hours, and (c) 2 hours.

Pages 488-489: Problems Involving Logarithmic Functions.

8. Write the logarithmic equation in exponential form:

$$\log_7 343 = 3$$

16. Write the exponential equation in logarithmic form:

$$13^2 = 169$$

24. Evaluate the function without using a calculator:

$$If\ f(x) = \log_{25} x, \qquad find\ f(5).$$

86. Use the "one to one" property of Logarithms to solve for x:

$$\log_2(x-3) = \log_2 9$$

Page 495: Using Properties of Logarithms

46. Expand the following expression using properties of logarithms. (Write as a sum or difference, and/or constant multiple of logarithms).

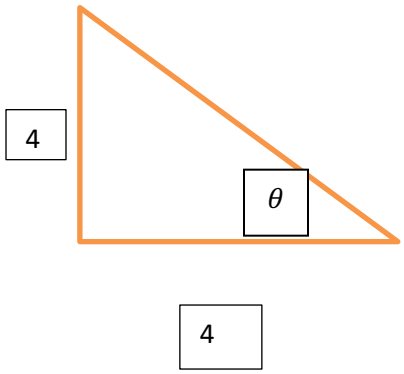
$$\log_{10} \frac{y}{2}$$

68. Write the expression as a single logarithm using properties of logarithms.

$$\log_5 8 - \log_5 t$$

Page 587: Right Angle Trigonometry

8. Using the figure below, (assume it is a right triangle), find the exact values of the six trigonometric functions for angle, θ:



14. Sketch a right triangle and include θ as an acute angle. Use the Pythagorean theorem to assist you in finding the third side of the triangle and then find the five remaining trigonometric functions of angle θ.

$$\cos\theta = \frac{5}{6}$$

Page 606: Graphs of Sine and Cosine Functions

6. Find the period and the amplitude of $y = 3\ \cos 2x$

32. Graph both functions on the same set of coordinate axes. Please include two full periods.

$$f(x) = \sin x$$

$$g(x) = \sin \frac{x}{3}$$