A.P. Calculus – August Review

(Rogawski, 2nd Edition)

A#1 Exponents & Radicals - worksheet

A#2* Functions and Graphs –
pp. 10-12, #23, 43, 55, 61, 65, 68, 74
pp. 38-39 (Chapter Review Ex.), #7-10, 16

A#3 Polynomials – worksheet

A#4* Linear & Quadratic Functions
pp. 19-20, #3, 7, 11, 15, 17, 23, 37

A#5 Rational Functions – worksheet

A#6* Using the Calculator
Read pp. 33-37
p. 38 (*Exercises* section, top of page) , #1, 3, 5, 13, 17

A#7* Limits & Continuity
pp. 46-47, #9, 20, 26
pp. 56-57, #5, 19, 23, 25, 29, 53, 57
p. 61, #27
pp. 69-70, #37, 54, 57
p. 75, #3
p. 79, #1, 3, 7, 11 (You will need to read about the theorem in the text.)
p. 90, #1, 5, 13 (You will need to read about the theorem in the text.)

A#8* Differentiation
pp. 107-109, #7, 11, 13, 31
pp. 118-119, #21, 23, 46
pp. 126-127, #13, 15, 26, 39

* Each assignment is to be done on a separate sheet of paper from the section entitled *Exercises*.

Calculus Review (August)
Exponents & Radicals

#1-9: Write the following in simple exponential form.

1. $(-8)^{(-\frac{1}{3})}$
2. $\left(\frac{10^{2.65}}{10^{2.15}}\right)^4$
3. $\left(\frac{1}{2}x^{\frac{1}{2}}\right)\left(\frac{3}{4}x^{\frac{3}{4}}\right) \div \frac{1}{4}x^{\frac{1}{4}}$
4. $4^{\frac{1}{2}} \div (4^0 + 4^{\frac{-1}{2}})$
5. $(x^{\frac{1}{3}} - y^{\frac{1}{3}})^3$
6. $(x+y)^{-1}(\frac{x^{-1}+y^{-1}}{x^{-1}})$
7. $2^{x+2} - (2^{x+1} + 2^x)$
8. $\sqrt[4]{\frac{4\sqrt{x^3}}{\sqrt[3]{x}}}$
9. $\sqrt[3]{a^4 b} + \sqrt[3]{ab^3} + 3\sqrt[6]{a^2 b^2}$
10. factor: $(2x+1)^{\frac{2}{3}} - 4(2x+1)^{\frac{-1}{3}}$

Calculus Review (August)
Polynomials

#1-5: Determine which of the following are polynomial functions. If the function is a polynomial, give its degree, its leading coefficient, its constant term, and possible rational roots (from the rational root theorem).

1. $f(x) = x + \frac{3}{x}$

2. $f(x) = 1 - 4x^4$

3. $h(x) = 5$

4. $q(x) = \quad 17x^{11} + 4x^5 - 7x^2 + 8$

5. $f(x) = 7^x - 71x$

6. Use your calculator to identify all the real roots of $f(x) = 12x^5 - 5x^4 + 2x - 1$.

#7-8: Use synthetic division to determine the quotient and the remainder. (without calculator)

7. $(3x^4 - 8x^3 + 9x + 5) \div (x - 2)$

8. $(2x^5 - 7x^4 + 15x^3 - 6x^2 - 10x + 5) \div (2x - 1)$

9. Give a polynomial of the smallest degree possible that has the following roots: 2 (multiplicity of 2); 4; 7(multiplicity of 5)

10. According to Descartes' Rule of Signs, how many positive real roots and how many negative real roots might the polynomial equation $p(x) = 4x^5 - 10x^4 + 2x^3 - 3x^2 - 12x + 81$ have?

Calculus Review (August)
Rational & Irrational Functions

#1-4: Solve for x:

1. $\frac{2x}{x+3}-\frac{4}{x-3}=-\frac{6}{x+3}$

2. $\sqrt{x+1}+1=-x$

3. $\frac{x^2+5x+6}{x^2-x}\geq 0$

4. $\frac{2}{x+3}\geq\frac{1}{x-1}$

5. Determine the domain: $y=\sqrt{\frac{x-5}{36-x^2}}$

#6-9: Sketch a complete graph.

6. $f(x)=\frac{x}{x^2-x-2}$

7. $f(x)=\frac{x^2-x-2}{x-1}$

8. $f(x)=\frac{2(x^2-9)}{x^2-4}$

9. $f(x)=\frac{(x-5)(x+7)^2}{(x-5)(x+4)(x-3)}$