Honors Math Analysis – Sullivan & Sullivan Chapter 5 (5.1 to 5.5)

Section	Activities/Resources	Assignment
5.1		1-14
5.1		16-20 even, 21, 26, 28, 31-52 by 3s
5.2	Exponents (p. 951-953 & 991-993)	11-24, 25-31 odd, 64, 66, 67
5.2		26-60 even
5.3		1-45 eoo, 53-60
5.3		62-92 eoe, 93-98, 100,105, 108
5.4		1-37 eoo, 41-52
5.4 & 5.5	**Quiz 5.1 to 5.3**	5.4: 59-71 eoo 5.5: 1-29 eoo
5.5		2-42 eoe
5.5		31-59 eoo
Review		2, 10, 12, 18, 22, 24, 26, 32, 36, 38, 44-62 even
Review		5, 7, 15, 21, 25, 27, 35, 43, 47, 51, 55, 61, 65
	Chapter 5 Test (5.1 to 5.5 only)	5.6 Pre-Reading

5.1

2.) a. D = {Beth, Diane, Linda, Marcia}, R = {Dave, Bob, John, Chuck} b. The inverse is a function.

4.) a. D = { Beth, Dian, Marcia}, R = {Bob, Dave, John, Chuck} b. The inverse is not a function; Marcia corresponds to two elements in the range.

6.) a. {(5, -2), (3, -1), (7,3), (12, 4)} b. Inverse is a function. 8.) a. {(2,1), (8,2), (18,3), (32,4)} b. Inverse is a function.

10.) One to one 12.) Not one to one. 14.) Not one to one. 16.) See graph

18.) See graph 20.) See graph

26.) $f(g(x)) = f(\sqrt{x}+2) = (\sqrt{x}+2-2)^2 = x \qquad g(f(x)) = g((x-2)^2) = \sqrt{(x-2)^2}+2 = x$

28.) f and g are same equation. 34.) $f^{-1}(x) = \dfrac{1-x}{3}$ D of f = R of f^{-1} : All reals; R of f = D of f^{-1}: All Reals

40.) $f^{-1}(x) = -\dfrac{3}{x}$; D of f = R of f^{-1}: all reals except 0; R of f = D of f^{-1}: all reals except 0. 46.) $f^{-1}(x) = \sqrt{x}+1, x \geq 0$; D of f = R of f^{-1}: $x \geq 1$, R of f = D of f^{-1}: $x \geq 0$ 52.) $f^{-1} = \dfrac{2x-4}{x+3}$; D of f = R of f^{-1}: all reals except -3, R of f = D of $^{-1}$: all reals except 2

5.2

12.) F 14.) H 16.) C 18.) G 20.) F 22.) C 24.) D

64.) a. 35 mm^2 b. 3 mm^2 66.) 362 students

26.) see graph 28.) see graph 30.) see graph 32.) see graph 34.) see graph 36. See graph
40.) see graph 42.) see graph 44.) 1 46.) 0, ½ 48.) ½ 50.) 3 52.) 0
54.) ¾ 56.) -6, 2 58.) 1/9 60.) 1/27

5.3

54.) F 56.) H 58.) C 60.) G 62.) see graph 66.) see graph 68.) see graph

72.) see graph 76.) 11/3 80.) -4 84.) -1/5 88.) $\frac{-1+\ln 13}{-2}$ 92.) -1 100.)a) 7 b) 6.31×10^{-5}

108.)a) $k \approx 0.021$ b) ≈ 38 words c) ≈ 54 words d) ≈ 110 days

5.4

42.) 42 44.) 3 46.) 1.796 48.) -3.907 50.) 2.584 52.) .303

5.5

2.) x = 0 6.) $x = \frac{1}{3}$ 10.) x = 4 (can't use -1) 14.) x = 0 18.) x ≈ 2.402

22.) x ≈ .234 26.) x ≈ -.297 30.) x ≈ -1.462 34.) x = 67

38.) x = 81 42.) $x = \ln(3+2\sqrt{2})$ or $x = \ln(3-2\sqrt{2})$

Review

2.) $f^{-1}(x) = \frac{2-3x}{x+1}$, D of f = R of f^{-1}: All reals except -3; R of f = D of f^{-1}: all reals except -1

10.) $e^{\ln .1} = .1$ 12.) $\log_2 2^{\sqrt{3}} = \sqrt{3}\log_2 2 = \sqrt{3}$ 18.) 2ln(2x+3) -2ln(x-2)-2ln(x-1)\

22.) $\log\frac{x-3}{x+4}$ 24.) $\ln\frac{\left(x^2+1\right)^{\frac{1}{2}}}{\frac{1}{16}\left(x\left(x-4\right)\right)^{\frac{1}{2}}}$ 26.) 4.392

32.) $y = \frac{2\ln(x+4)+C}{3}$ 36.) D: $(-\infty,\infty)$, R: $(1,\infty)$, HASY y = 1 38.) D: $(0,\infty)$, R: $(-\infty,\infty)$, VASY x = 0

44.) $\left(2^3\right)^{6+3x} = 2^2$; 18+9x = 2, $x = -\frac{16}{9}$ 46.) $\left(2^2\right)^{x-x^2} = 2^{-1}$; $2x - 2x^2 = -1$; $x = \frac{1\pm\sqrt{3}}{2}$

48.) $x = \frac{1}{8}$ 50.) (x+2)log5 = (x-2)log7; x(log5-log7)=-2log7-2log5; x ≈ 21.133

52.) $\left(5^2\right)^{2x} = 5^{x^2-12}$; $x^2 - 4x - 12 = 0$; x = 6 or x = -2

54.) $2^{x+1}\left(2^3\right)^{-x} = 2^2$; -2x + 1 = 2; $x = -\frac{1}{2}$

56.) $\ln(2^x \bullet 5) = \ln 10^x$; x(ln2 – ln10) = -ln5; x = 1

58.) $\log_{10}(7x-12) = \log_{10} x^2$; $x^2 - 7x + 12 = 0$; x = 4 or 3

60.) 1 – 2x = ln4; x ≈ -.193

62.) $\ln 2^{x^3} = \ln 3^{x^2}$; $x^2(x\ln 2 - \ln 3) = 0$; x = 0 or x ≈ 1.585