

Honors Pre-Calculus – Sullivan & Sullivan
Chapter 2 2013

Section	Activities/Resources	Assignment
2.1	Chapter 1 Test	21-34 & 39-50
2.1	Warm-ups 100 & 101	51-72 x 3s, 74, 76, 79-83, 85, 88, 91
2.2		1-15 odd, 37-45 eoo, 51, 54
2.2		59a, b, 61a, b, 70, 73
2.3	2.3 Summary worksheet Greatest Integer FUNction & Piece-wise Graphing	18, 19-28 x 3s, 31-34
2.3	Can $y = x $ be written as a Piece-wise Function?	9-16, 20-29 by 3
2.4	Transformations Exploration (small groups)	18-32 even
2.4	Quiz 2.1 to 2.3 Random transformations	33-61 odd, (do graphs by hand, may check on TI if desired), 63
2.4		34-62 even, (do graphs by hand, may check on TI if desired)
2.5		5, 9, 18, 36, 44, 47, 56, 57, 59, 65
2.6	Box Problem	9, 16, 31, 33, 34
Review	Quiz 2.4 & 2.5	2-70 eoe , omit 26
Review	p. 167 – 168 Fill-ins & T/F orally	1, 7, 19, 21, 35, 41, 43, 49, 53, 59
	Test Chapter 2	Take It to the Limit Internet Activity – see website for worksheet

2.1 22. $f(6) = 0, f(11) = 1$ 24. $f(8)$ is negative 26. $f(x) > 0$ when $-3 < x < 7$ and $10 < x \leq 11$ 28. $[-3, 4]$ 30. $(0, 3)$
 32. The line $y = 3$ intersects the graph 2 times. 34. $f(x) = -2$ when $x = -5$ and $x = 8$ 40. Function (a) D: Reals; R: $y > 0$
 (b) $(0, 1)$ (c) No symmetry 42. Function (a) D: $-\pi \leq x \leq \pi$, R: $-1 \leq y \leq 1$ (b) $(-\pi, 0), (\pi, 0), (0, 0)$ (c) origin
 44. Not a function 46. Function (a) D: $0 \leq x \leq 4$; R: $0 \leq y \leq 3$ (b) $(0, 0)$ (c) No symmetry 48. Function (a) d: $x \geq -3$; R: $y \geq 0$
 (b) $(-3, 0), (2, 0), (0, 2)$ (c) No symmetry 50. Function (a) D: Reals; R: $y \leq 5$ (b) $(-1, 0), (2, 0), (0, 4)$ (c) No symmetry
2.1 (day 2) 54. $f(x) = \frac{x^2}{x^2 + 1}$; D: Reals 60. $G(x) = \sqrt{x-1}$; D: $x \leq 1$ 66. $y = x^3 - 3x$ passes vertical line test thus a function
 72. $x + 2y^2 = 1$ $(-1, 1)$ and $(-1, -1)$ are on graph; not a function 74. (a) II (b) V (c) IV (d) III (e) I 80. $B = 5$ 82. $B = -1$
 88. (a) yes (b) see TI (c) $G = 0.9639x + 0.0724$ (d) As the high school GPA increases by 1, the college GPA increases by 0.9639 (e)
 $G(x) = 0.9639x + 0.0724$
 (f) D: $x \geq 0$ (g) about 3.19

2.2 54. local max: $(0, 0)$ local min: $(-.71, -.25)$ $(.71, -.25)$ increasing: $(-.71, 0), (.71, 2)$ decreasing: $(-2, -.71), (0, .71)$
2.2 (day 2) 70. $x = 2.71$ feet

2.3 18. (a) 0 (b) 0 (c) -1 22. (a) D: Reals (b) (-3, 0), (-1.5, 0) (d) $y \leq 1$ 28. (a) D: $x \geq -3$ (b) (-3, 0), (0, 3) (d) $y \geq 0$

$$32. f(x) = \begin{cases} x & \text{if } -1 \leq x \leq 0 \\ 1 & \text{if } 0 < x \leq 2 \end{cases} \quad 34. f(x) = \begin{cases} 2x+2 & \text{if } -1 \leq x \leq 0 \\ x & \text{if } x > 0 \end{cases}$$

2.3 (day 2) 16. (a) -1 (b) 2 (c) 5 20. (a) D: Reals (b) none, (0, 4) (d) $y \neq 0$ 26. (a) D: Reals (b) (0, 0), (0, 0) (d) Reals

2.4 18. $y = (x-4)^3$ 20. $y = x^3 - 4$ 22. $y = -x^3$ 24. $y = (\frac{1}{4}x)^3$ 26. (1) $y = -\sqrt{x}$ (2) $y = -\sqrt{x-3}$ (3) $y = -\sqrt{x-3} - 2$
28. (1) $y = \sqrt{x} + 2$ (2) $y = \sqrt{-x} + 2$ (3) $y = \sqrt{-(x+3)} + 2 = \sqrt{-x-3} + 2$ 30. D 32. A

2.4 (day 3) check on TI

2.5 18. (a) $\sqrt{13}$ (b) $3\sqrt{3}$ (c) $\sqrt{\sqrt{2}+1}$ (d) 0 36. (a) $(f \circ g)x = 4x^4 + 12x^2 + 10$ D: Reals (b) $(g \circ f)x = 2x^4 + 4x^2 + 5$ D: Reals

(c) $(f \circ f)x = x^4 + 2x^2 + 2$ D: Reals (d) $(g \circ g)x = 8x^4 + 24x^2 + 21$ D: Reals 44. (a) $(f \circ g)x = \sqrt{\frac{3x-8}{x-2}}$ D: $x < 2$ or $x \geq \frac{8}{3}$

(b) $(g \circ f)x = \frac{2}{\sqrt{3-x}-2}$ D: $x \leq 3, x \neq -1$ (c) $(f \circ f)x = \sqrt{3-\sqrt{3-x}}$ D: $-6 \leq x \leq 3$ (d) $(g \circ g) = \frac{x-2}{3-x}$ D: $x \neq 2, 3$

56. $H(x) = (1+x^2)^3$ $f(x) = x^3, g(x) = 1+x^2$

2.6 16. $A(x) = 2x\sqrt{4-x^2}$ (b) $p(x) = 4x + 2\sqrt{4-x^2}$ (c) $x \approx 1.41$ (d) $x \approx 1.79$ 34. $V = \pi Hr^2 \left(1 - \frac{r}{R}\right)$

Review 2. $g(x) = -4x - 6$ 6. (a) D: $-5 \leq x \leq 4$ R: $-3 \leq y \leq 1$ (b) $f(-1) = 1$ (c) (0, 0), (4, 0) (d) Increasing: (3, 4); Decreasing: (-1, 3); Constant: (-5, -1) (e) neither 10. (a) $f(-x) = |x^2 - 4|$ (b) $-f(x) = -|x^2 - 4|$ (c) $f(x+2) = |x^2 + 4x|$ (d) $f(x-2) = |x^2 - 4x|$ (e) $f(2x) = 4|x^2 - 1|$ 14. $x \neq 2$ 18. $x \neq 0$ 22. (a) D: $x > -3$ (b) (1/3, 0), (0, -1) (d) $y > -4$ 30. even 34. neither

38. Intercepts: (0, 4), D: Reals, R: $y \geq 4$ 42. Intercepts: (1, 0), (0, -1), D: $x \geq 0$, R: $y \geq -1$ 46. Intercepts: (0, 1), $(-2 \pm \sqrt{3}, 0)$, D: Reals, R: $y \geq -3$ 50. Local max: (1, -3), Local min: (-1, -7), Increasing: (-1, 1), Decreasing: (-3, -1), (1, 3)

54. (a) -1 (b) 37 (c) 4 (d) 5 58. (a) 2/73 (b) 2/3 (c) 2178/1097 (d) -9 62. (a) $\sqrt{3+3x+3x^2}$ D: Reals (b) $1 + \sqrt{3x} + 3x$
D: $x \geq 0$ (c) $\sqrt{\sqrt{3x}}$ D: $x \geq 0$ (d) $3 + 3x + 4x^2 + 2x^3 + x^4$ D: Reals 70. (a) $A(x) = 2x^2 + \frac{40}{x}$ (b) 42 ft² (c) 28 ft² (d) $x = 2.15$