

Math 153 Assignments Fall 2009

September 23

Exercises 1.5/9, 11, 13 1.6/1, 17

September 24

Solve and simplify the following quadratics by completing the square.

1. $2x^2 - 15 = 12x$ 2. $3x^2 - 9x = 10$ 3. $-x^2 + 6x + 12 = 0$

Answers

1. $x = \frac{6 \pm \sqrt{66}}{2}$ 2. $x = \frac{9 \pm \sqrt{201}}{6}$ 3. $x = 3 \pm \sqrt{21}$

September 29

Read Example 6 in §1.7

Exercises 1.7/ 39 to 47 all (For 43 to 47 also find the x – intercepts)

N.B., $\sqrt{\sqrt{2}} = \sqrt[4]{2} = 2^{1/4}$

September 30, 2009

Exercises 2.2/1 to 9 odd, 61 to 67 odd

October 5, 2009

Read pp 114 – 116 (up to example 2)

Exercises 2.4/ 9, 11 13, 15, 19, 43, 47, 51

October 6

Solve the following inequalities. Express your solution as a linear graph and using interval notation.

1. $x^3(x-1)^4(x+3) \geq 0$

2. $(x+5)^2(x+7)^3(x-1) \leq 0$

3. $\frac{(x+1)^2(x-4)}{x(x+9)} \geq 0$

4. $\frac{(2x-1)(x-4)}{x(x-6)} \leq 0$

Interval Answers

1. $(-\infty, -3] \cup [0, \infty)$

2. $[-7, 1]$

3. $(-9, 0) \cup [4, \infty)$

4. $(0, 1/2] \cup [4, 6)$

October 7, 2009

Read examples 3 and 8 from §3.1

Exercises 3.1/9, 11, 15a,b, 29a to 29h, 33

October 12

From §3.2, read examples 2, 3, 4.

Exercises 3.2/ 1 to 11 all, 15, 17

October 13

From §3.3, read examples 2, 3, 4

Exercises §3.3/9, 11, 13, 16a, 23b, 27b, 28b

October 14

From §3.4, read “summary” on pp 172 and examples 2, 4, 6.

Exercises 3.4/1, 25 to 30 all, 35 to 40 all

October 19

From §3.5, read examples 1, 2, 3, 4

Exercises 3.5/ 1, 2, 9, 11, 13, 15

October 20

From §3.6, read examples 1,3, 4 & 6

Exercises 3.6/ 9, 10, 17b, 18 (Only find the inverse function. Domain and Range will be discussed on Wednesday)

October 21

Exercises 3.6/ 17a, 18, 23a,b,c, 36 to 40 all

October 26, 2009

From §4.4, read examples 1, 2, 4, 5, 6, 8

Exercises 4.4/1, 2, 4, 6, 9, 22

October 27

From §4.5, read example 5.

Exercises 4.5/ 16, 17, 35

Math 153 Applied Max Problems

1. Willie's Widget Company sells widgets. Willie sells his widgets at \$100 each and each widget cost him \$40 to manufacture. At this price Willie knows that he will sell 80 widgets/week. He also knows that for each \$2 increase in the price, he will sell 5 fewer widgets each week.

- a) At what price/widget will Willie maximize his *revenue*?
- b) At what price/widget will Willie maximize his *profit*?

2. Barry's Bookstore sells calculus textbooks. Barry sells these textbooks for \$120 each and each textbook cost Barry \$80. At this price he will sell 200 of these books each academic term. Barry also knows that for each \$3 increase in the price he will sell 10 fewer calculus books.

- a) At what price/book will Barry maximize his *revenue*?
- b) At what price/book will Barry maximize his *profit*?

3. Carroll's Candy Company sells candy. Carroll's most popular item is the 20 piece chocolate box "Delightful Decadence" at \$10.00/box. Each box costs Carroll \$5.00. At this price Carroll will sell 80 boxes each month. She also knows that for each 50¢ increase in the price she will sell 5 fewer boxes each month.

- a) At what price/box (in dollars) will Carroll maximize her *revenue*?
- b) At what price/box (in dollars) will Carroll maximize her *profit*?

Answers

	<u>Max Revenue</u>	<u>Max Profit</u>
1.	\$66	\$86
2.	\$90	\$130
3.	\$9	\$11.50

November 3

Exercises 4.6/35, 36, 43

Caution on 43: $y < 0$ when $x > 2$.

November 9

From §12.2, read top of pp 900, and example 1

Exercises 12.2/5, 7, 8, 9

November 10

From §12.3, read examples 5 and 6

Exercises 12.3/ 27, 29, 33, 36

November 12

Exercises 12.3/34, 37

Answer for 34: $x = \frac{-1 \pm \sqrt{17}}{4}$

November 17

From §5.1, read examples 4, 5, 7

Exercises 5.1/11, 25, 26, 30, 34, 35

Also, graph $y = 4^{x-1} - 2$.

N.B., $4^{1/2} = 2$.

November 18

From §5.6, read examples 3, 4, 6

Exercises 5.6/5, 8, 9 10, 18

November 19

From §5.3, read example 2.

From §5.4, read example 4.

Exercises 5.3/17, 18, 31 5.4/27 to 39 all