

Math 111 End of Week 5 Newsletter

UPCOMING SCHEDULE:

Friday (Today): Section 2.3 - Business Applications with Algebra
Monday: Section 2.3 - More Business Applications with Algebra
Tuesday: *Activity 5*: Summary of All Ways to Maximize Profit.
Wednesday: Section 1.5 - Solving Linear Systems and Graphing Inequalities (prep for 4.1/4.2)
Thursday: Test Prep and HW Discussion
Next Friday: Section 4.1/4.2: Intro to Linear Programming (Examples from lecture pack)

ACTIVITIES: Here are solutions to Activity 4 (Exploring Facts and Algebra about Quadratic Functions):

<https://sites.math.washington.edu/~aloveles/Math111Winter2020/Activity04key.pdf>

Here is Activity 5 (Summary of How to Maximize Profit) which you will do on Tuesday:

<https://sites.math.washington.edu/~aloveles/Math111Winter2020/Activity05.pdf>

NEXT WEEK HW SCHEDULE:

Closing Tuesday: Section 2.3 (part 1) (**Warning:** 2.3 (part 1) is a big assignment!)
Closing *next* Thursday: Section 2.3 (part 2) **AND** Section 1.5 (more practice with intersections of lines)

NEW POSTINGS: Here are some new postings that should help you now and this next week.

1. **Summary and Organization for How to do all Homework Problems like those in HW 2.2 and 2.3:**
<http://www.math.washington.edu/~aloveles/Math111Winter2020/Chapter2ProblemOverview.pdf>
2. **Section 2.3 Review with LOTS of old exam practice problems and solutions (Applied problem review):**
<http://www.math.washington.edu/~aloveles/Math111Winter2020/Section2.3Review.pdf>
3. **Additional Fully Worked Out Examples From 1.5 and 4.1 (linear intersection and graphing skills review):**
<http://www.math.washington.edu/~aloveles/Math111Winter2020/Section1.5&4.1Review.pdf>

You can find these and other reviews sheet always organized on the right side of my course webpage.

Old Exam Practice Problems

Remember you should peek at the exam archive at least once a week to check if you are actually understanding the homework well enough to show your understanding on a test. The exam archive is here:

<https://sites.math.washington.edu/~m111/Archives.html> (make sure to scroll down to exams labeled "Midterm 2")

I just went through several of the exams and categorized problems by topic. You should be able to do the 2.1/2.2 problem below NOW. And you should be able to do the 2.3 problems after Fridays lecture. Click on these exams this weekend and peek at these problems and see if you will be able to do them on exam 2!

Just like 2.1/2.2 HW (quadratic and functional notation general skills):

Problem 2 from: https://sites.math.washington.edu/~m111/Midterm2/au15_MT2_Loveless.pdf

Problem 2 from: https://sites.math.washington.edu/~m111/Midterm2/Wi18_MT2_bekyel.pdf

Problem 2 from: https://sites.math.washington.edu/~m111/Midterm2/win16_MT2_taggart.pdf

Just like 2.3 HW (applied problems on quadratics and functional notation):

Problems 1 and 2 from: https://sites.math.washington.edu/~m111/Midterm2/au16_MT2_Loveless.pdf

Problem 1 from: https://sites.math.washington.edu/~m111/Midterm2/au15_MT2_Loveless.pdf

Problems 2 and 3 from: https://sites.math.washington.edu/~m111/Midterm2/aut14_MT2_loveless.pdf

Problem 1 from: https://sites.math.washington.edu/~m111/Midterm2/Wi18_MT2_bekyel.pdf

Problem 1 from: https://sites.math.washington.edu/~m111/Midterm2/win16_MT2_taggart.pdf

Just like 1.6/1.5 HW (supply/demand and finding lines and intersections):

Problem 4(a) from: https://sites.math.washington.edu/~m111/Midterm2/au16_MT2_Loveless.pdf

Problem 4(a) from: https://sites.math.washington.edu/~m111/Midterm2/au15_MT2_Loveless.pdf

Problem 1(a) from: https://sites.math.washington.edu/~m111/Midterm2/aut14_MT2_loveless.pdf

MATERIAL NOTES and PREVIEW OF THINGS TO COME

Chapter 2 Notes

There are TWO key skills you need to know in chapter 2:

1. **Quadratic Skills:** If you are given a quadratic functions (for example: $f(x) = -2x^2 + 16x + 4$), can you

(a) Find the x and y coordinates of the vertex. Recall: $x = -\frac{b}{2a}$.

(b) Solve for when the function equals zero (i.e. crosses the x-axis). Recall: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

(c) Draw a rough sketch based on these facts.

On every applied problem involving quadratics please sketch a rough sketch, this will help you in translating!!

2. **Functional Notation Skills:** You must know functional notation and how to use it.

Example, if $TC(x) = 5 + 3x + 2x^2$, then what is $AC(x)$ and $AVC(x)$?

ANSWER: $AC(x) = \frac{TC(x)}{x} = \frac{5+3x+2x^2}{x} = \frac{5}{x} + 3 + 2x$ and $AVC(x) = \frac{VC(x)}{x} = \frac{3x+2x^2}{x} = 3 + 2x$

Another example, if $TR(x) = 50x - 2x^2$ and x is in items (it changes a bit if it is in hundreds or thousands), what is $MR(x)$?

$$\begin{aligned} \text{ANSWER: } MR(x) &= \frac{TR(x+1) - TR(x)}{1} = \frac{[50(x+1) - 2(x+1)^2] - [50x - 2x^2]}{1} \\ &= 50x + 50 - 2(x^2 + 2x + 1) - 50x + 2x^2 = 50 - 2x^2 - 4x - 2 + 2x^2 = 48 - 4x. \end{aligned}$$

These are the skills you were practicing in sections 2.1 and 2.2. Now you will USE them in 2.3. I gave handouts in class with extra practice if you are still struggling with these skills. If your Quadratic and Functional skills are strong, then the remaining challenge in 2.3 is reading and translating questions (and making sure we actually answer the question). See my 2.3 review sheets to help with this and we will be doing lots of examples in lecture.

Section 1.5 and intro to Chapter 4

By the end of the next week, we will move on to a few basic tools about a company selling “two products” instead of just one. We will only study “linear” situations in this case and we will need to once again we good at finding lines, finding intersections of lines, and graphing lines. The method which we will discuss in 4.2 is called “linear programming” and it will be a simple ideas but we do need the following skills:

Finding intersections of linear functions. (This is section 1.5)

Graphing inequalities. (This is section 4.1).

Once we have these skills, we can discuss the so-called linear programming method (section 4.2).

Okay, if you find something helpful here, please advertise to your classmates. I want these materials to be used.

Dr. Andy Loveless