MATH 141 HW #2:
CHAPTERS 2 AND 3
FALL 2008

Write your name and "Math 141" and clearly separate sections! See the syllabus.
Show work where appropriate, and use "good form and procedure," as in class!
This is due when you take Midterm 2.
Graded out of 15 points.
"*" denotes "See comment below."
Ask me for answers to "evens" and "My Problems" during our main question session.

I encourage you to circle problems and write comments as you go along.
If you wish, separate chapters and staple and put your name and "Math 141" on each part.
It is possible that calculators will be forbidden on at least part of the test.

My notes are also fair game for tests. If necessary, read the textbook for more examples.

CHAPTER 2

2.1: 1-8 all, 9, 13, 17, 19, 21, 23, 25*, 27, 39, 45, 53, 55, 71*, 76*, 78*, 81*, 89

On 25: Use both methods we have discussed in class for finding the vertex.

Note on 71: Can you think of a geometric application?

Look at 75: You will be doing this kind of "optimization" problem in Calculus.

Answer to 76c: $A = x\left(\frac{200 - 2x}{\pi}\right)$.

(You may see something like this in a Calculus problem.)

Answers to 78: a) 1.5 feet, b) about 104.02 feet, c) about 228.64 feet.

Look at 79 and 83, along with 81.

Look at 91.

2.2: 1-8 all, 9, 31*, 35*, 39*, 41*, 57, 59, 61, 65*

My Problem #1: Find $\lim_{x\to-\infty} f(x)$ and $\lim_{x\to\infty} f(x)$ for Problems 5, 6, 7, and 8. Each answer will be either ∞ or $-\infty$. (Answers on the last page.)

On 31, 35, 39, and 41: Just find the real zeros and determine their multiplicities. You should write down the actual multiplicities as numbers, not just as "even" or "odd" as in the back of the book.

On 65: There's another answer that is **much** simpler than the answer in the back of the book!

2.3: 7, 11, 13, 15, 19, 21, 25, 29*, 37, 45, 49, 83

Note on 29: Can you see another way this could be done without long or synthetic division?

2.4: 5, 21, 27, 33, 37, 39, 43, 45, 47, 49, 59, 65, 67, 75, 81, 86

Look at 83: This is an application of complex numbers in electrical engineering.

2.5: 5, 7, 15, 21, 23, 25ac, 27ac, 37, 43, 55-63 odd, 67*, 69, 71, 79*, 81*, 83, 85, 97, 113*, 115, 117, 119, 128 (don't have to use graphing utility)

Hint on 67: You may use the fact that $-\frac{1}{5}$ is a root.

Correction on 79: The back of the book is wrong; 0 is a real zero.

Note on 81: Why do the results make sense?

Look at 89: If you'd like to practice the Upper and Lower Bound Rules.

Note on 113: Can you think of a graphical approach, as well as an approach based on this section?

2.6: 1, 5*, 7*, 9*, 11*, 13-16 all*, 17, 19, 21, 23, 27-45 odd: parts abc*, 51abc, 53abc, 59abc*, 69, 75b

My Problem #2: Sketch the graph of $f(x) = \dfrac{x^2 - 25}{x - 5}$.

Note on 5-11: Write your "domain" answers using interval form.
The answers are at the end of this assignment.

Note on 13-16: Think about both vertical and horizontal asymptotes.

Correction on 43b: The back of the book is wrong: The *y*-intercept is at $\left(0, -\dfrac{1}{3}\right)$, not $\left(0, \dfrac{1}{3}\right)$.

Hint on 59: Consider Long Division.

2.7: 13, 15, 55, 57, 59

If you are a potential math major, see the proofs on pp.213-4.

Look at #6 on p.215. This is a key idea in Calculus.

CHAPTER 3

3.1: 1, 5, 7-10 all, 27, 29, 31, 55, 61, 63, 65, 67ab, 71, 73

3.2: 1-29 odd, 31, 35, 37, 39 (not 40-44), 61, 93

3.3: 1, 9, 23, 29, 31, 33, 37, 43, 49, 53, 55, 57, 61, 69, 71, 79, 88

Look at 102.

3.4: 1, 9, 13, 15, 17, 19, 21, 25, 29, 31, 33, 53, 55, 61, 65*, 75, 85-95 odd

Note on 65: Can you see a practical application of this problem?

Look at 107, 109, 116, 124.

3.5: 17, 31, 35

Skim this section. Lots of interesting applications!

Look at 36, 42, 49, 63.

Answers to My Problem #1 (Section 2.2):

Problem	$\lim_{x\to-\infty} f(x)$	$\lim_{x\to\infty} f(x)$
5	$-\infty$	$-\infty$
6	∞	$-\infty$
7	∞	∞
8	$-\infty$	∞

Some Domain Answers for Section 2.6:

5) $(-\infty, 0)\cup(0, \infty)$, **7)** $(-\infty, 2)\cup(2, \infty)$, **9)** $(-\infty, -1)\cup(-1, 1)\cup(1, \infty)$, **11)** $(-\infty, \infty)$