MATH 3040: REVISIONS

What I would like you to do is the following:

(a) Go through your old homeworks and exams.
(b) Find problems that you attempted, but did not get full credit on.
(c) Paste in your old work. (This should be easy since you've been LaTeXing everything thus far!)
(d) Write a paragraph explaining why your old attempt didn't work, your proof was flawed, etc.
(e) Fix your problem by attaching a new and correct solution.

For assignments from the first part of the course, up to and including the first prelim exam, the due date for revisions will be **Monday, October 30.** We will give partial credit for correct answers when we calculate the final grades.

Here is an example of how the format should be.

Homework 32.1(b) There are infinitely many prime numbers.

Old proof that didn't work: 2 is a prime, 3 is a prime, 5 is a prime, 7 is a prime... it seems to be true. I can't see why it shouldn't be true.

Reasons that the old proof does not work: I only gave four examples of prime numbers, and this doesn't prove that there are infinitely many primes.

New proof. We proceed by contradiction. Suppose that there were only finitely many primes; we take all of them and label them $p_1, p_2, \ldots, p_n$. Consider the product $Q = \prod_{i=1}^{n} p_i$ and note that Q is divisible by every prime number p_i. Since Q is a natural number, it has a unique factorization into primes. However, $Q+1$ is not a multiple of any of the p_i's, because p_i divides $(Q+1)-1$. Thus, $Q+1$ must itself be a prime number. However, $Q+1 > p_i$ for any prime p_i in our list of primes, so our initial list of primes did not contain all the prime numbers, which is a contradiction. $\square$

Date: October 18, 2017.