The (only) homework due the week after the midterm, on Wednesday, November 8, will be the first submission of a *portfolio* proof. The idea of a portfolio proof is to produce a polished version of a proof that can serve you as an example in your future courses. The first submission will be graded for 10 points primarily for mathematical correctness, but also for basic proof writing requirements. If there are significant mathematical errors, you will correct those errors and submit it for a second time, and be able to regain a portion of the points lost for the errors in the first submission. Then a final submission will be graded primarily for the quality of the writing for another 10 points. The total of 20 points will be converted to a percentage and count as one homework assignment for your homework average for the quarter. There may be another portfolio problem later in the quarter.

Here is the proposition for this portfolio proof.

Theorem. For all integers a and b, the sum $a^2 + b^2$ is divisible by 4 if and only if a and b are both even.