

## MTH 365/465 STUDY GUIDE FOR EXAM I SPRING 2016

Exam I will be held on Friday, February 19th, 12-1pm, in room 403. You can use a calculator and a two-sided letter size cheat-sheet. We will have a review session during our Wednesday class, on February 17th.

What you need to know for the first exam:

- Given a set of vectors that span a vector space  $V$ , use the Gram-Schmidt algorithm to determine an orthonormal basis for  $V$ .
- Find  $LU$  (or  $P^T LU$ ) for a given matrix,  $A = LU$  (or  $PA = LU$ ), where  $L$  is lower-triangular with ones on the diagonal,  $U$  is upper-triangular (and  $P$  is a permutation matrix).
- Find a Cholesky factorization of a given matrix,  $A = LL^T$ , where  $L$  is lower-diagonal.
- Solve a linear system  $A\mathbf{x} = \mathbf{b}$  using Gaussian elimination with or without partial pivoting.