Remark 0.1. So what? Why is this important? We wish to work with H to determine its eigenvalues. The foregoing reveals that we will need to compute K_n if we wish to compute H. The problem is that K_n will tend to multiples of the dominant eigenvector of A, since K_n is obtained by performing power iteration a few times on x_0. This makes K_n highly ill conditioned, so that the Hesenberg form that we would obtain by mat-mat multiplication is likely not useful. What we will therefore do is that we will find a $Q_n R_n$ factorization for K_n.