MT-A315 Introduction to Linear Algebra Worksheet 6.4

Group: _____ Present: _____

1. Suppose that A is a 3×3 matrix and that Q_1, Q_2 and Q_3 form a basis for R^3. Suppose also that $AQ_1 = -Q_2 + 3Q_3, AQ_2 = -2Q_3, AQ_3 = \mathbf{0}$.

   Find a matrix M such that $A = QMQ^{-1}$ where $Q = [Q_1, Q_2, Q_3]$. Use your result to prove that A is nilpotent.