Homework Set 4

MATH 201 — WINTER 2015

Due Tuesday, February 3

Section 2.2
Problems 2, 10, 16, 22, 32.
Section 2.3
Problems 2, 4, 8, 14, 18, 20, 36.
Section 3.1
Problems 6, 14, 24, 36.

PROBLEM 4.1.   Let A, B, C be $n \times n$-matrices. Prove that $(ABC)^T = C^T B^T A^T$.

PROBLEM 4.2.   Find nonzero matrices A and B such that $AB = 0$ and $BA = 0$.

PROBLEM 4.3.   Prove or disprove: There is a nonzero 2×2 matrix A such that $A^2 = 0$.

PROBLEM 4.4.   Let $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ such that $ad - bc \neq 0$. Show that if $AB = AC$ for 2×4 matrices B, C, then $B = C$.