Homework Set 5

MATH 201 — WINTER 2015

Due Tuesday, February 17

Section 3.2
Problems 30, 34, 40.
Section 3.3
Problems 20, 22, 28.
Section 4.1
Problems 2, 6, 10, 14, 18.
Section 4.2
Problems 6, 10, 24, 28, 30.

PROBLEM 5.1.   Let A be an $n \times n$ matrix. Suppose that $\mathrm{Nul}(A) = \{\mathbf{0}\}$. Does it follow that $\mathrm{Col}(A) = \mathbb{R}^n$? Justify your answer.

PROBLEM 5.2.   Let A be a 3×2 matrix. Suppose that $\mathrm{Nul}(A) = \{\mathbf{0}\}$. Does it follow that $\mathrm{Col}(A) = \mathbb{R}^3$? Justify your answer.

PROBLEM 5.3.   Let A be an $m \times n$ matrix and B be an $n \times p$ matrix. Prove that $\mathrm{Col}(AB)$ is a subspace of $\mathrm{Col}(A)$.

PROBLEM 5.4.   Let A, B be $n \times n$ matrices. Is $\mathrm{Col}(AB)$ a subspace of $\mathrm{Col}(B)$? Justify your answer.