

Linear Algebra, Spring 2016
Quiz 8

Name: SOLUTIONS

You must show all your work to receive credit. Calculators are allowed.

Problem 1: (3 points) Let $\vec{v}_1, \vec{v}_2, \vec{v}_3$ be vectors in \mathbb{R}^3 such that $\text{Det} [\vec{v}_1 \ \vec{v}_2 \ \vec{v}_3] = 13$.
Find

$$\text{Det} [5\vec{v}_1 + 3\vec{v}_3 \ \vec{v}_3 \ 7\vec{v}_1 - 11\vec{v}_2].$$

$$|5\vec{v}_1 + 3\vec{v}_3 \ \vec{v}_3 \ 7\vec{v}_1 - 11\vec{v}_2| = 5 | \vec{v}_1 \ \vec{v}_3 \ 7\vec{v}_1 - 11\vec{v}_2 |$$

$$+ 3 | \vec{v}_3 \ \vec{v}_3 \ 7\vec{v}_1 - 11\vec{v}_2 | = 5 [7 | \vec{v}_1 \ \vec{v}_3 \ \vec{v}_1 | - 11 | \vec{v}_1 \ \vec{v}_3 \ \vec{v}_2 |]$$

$$+ 3 \cdot 0 = 5 [0 + 11 | \vec{v}_1 \ \vec{v}_2 \ \vec{v}_3 |] = 5 [11 \cdot 13] = 715$$