

MAT 211: Linear Algebra
Problem Set 1

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Problem 1. (2+2+2 points) Consider two vectors $u = [5, 3]$ and $v = [3, 5]$. Compute:

- 1) $(u - v) \cdot v$,
- 2) $u \cdot (u + v)$,
- 3) $(u - v) \cdot (u + v)$,

where “ $\cdot$ ” denotes the dot product between vectors.

Problem 2. (2+2+2 points.) Check if the following vectors are parallel:

- 1) $[1, 2]$ and $[2, 1]$;
- 2) $[6, -9]$ and $[-4, 6]$;
- 3) $[1, 1]$ and $[2k, 4 - 2k]$, where k is a real number not equal to 1.

Due Date: Thursday, September 9.