

Written HW19 – MATH 1540 Spring 2022

Due by 29 April for timely completion credit

Recall the operations of vectors as discussed in class:

Vector addition: $\langle a, b \rangle + \langle c, d \rangle = \langle a + c, b + d \rangle$

Scalar multiplication: $\alpha \langle a, b \rangle = \langle \alpha a, \alpha b \rangle$

Dot product: $\langle a, b \rangle \cdot \langle c, d \rangle = ac + bd$

Magnitude: $\|\langle a, b \rangle\| = \sqrt{a^2 + b^2}$

Consider the vectors $\vec{a} = \langle 1, 3 \rangle$ and $\vec{b} = \langle -1, 5 \rangle$.

1. Compute $2\vec{a} - 3\vec{b}$.
2. Compute $\|\vec{a}\|$.
3. Compute $\vec{a} \cdot \vec{b}$
4. Solve for \vec{x} : $2\vec{x} + 3\vec{a} = \vec{b}$