

Name : _____

Homework #2

Math 301, Spring 2013

Due Wednesday, Feb 6, 2013

These homework problems are to be turned in and graded for credit. Please turn in your work on separate pages, using this as a cover sheet. Please staple your work together.

1. If $\mathbf{v} = \begin{bmatrix} -1 \\ 3 \end{bmatrix}$ and $\mathbf{w} = \begin{bmatrix} 4 \\ -3 \end{bmatrix}$ compute and draw $\mathbf{v} - 2\mathbf{w}$ and $3\mathbf{v} + \mathbf{w}$.

2. For $\mathbf{v} = (3, 1)$ and $\mathbf{w} = (5, 1)$, find a number c so that $\mathbf{w} - c\mathbf{v}$ is perpendicular to \mathbf{v} . Draw a geometric interpretation of this problem.

3. Find a and b so that

$$a \begin{bmatrix} 2 \\ 4 \end{bmatrix} + b \begin{bmatrix} -1 \\ 3 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$

Draw a geometric interpretation of the solution you found.

4. What 3×3 matrix E multiplies (x, y, z) to give $(x, y + z, 2y)$?