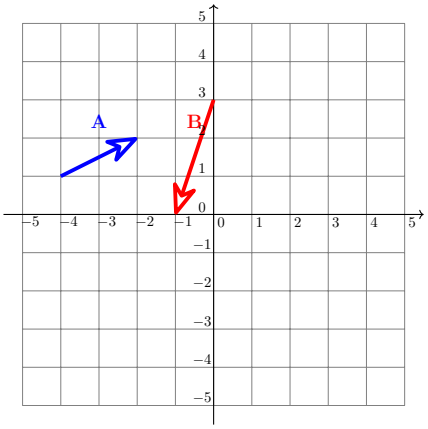
Math 243 **Weekly Assignment 2** **DUE 09/09/2016**

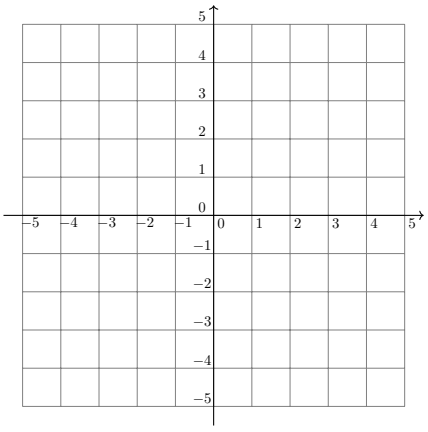
Name: _____

Answer the questions on the worksheet and not on a separate sheet of paper. Please circle your answers and justify your work for full credit.

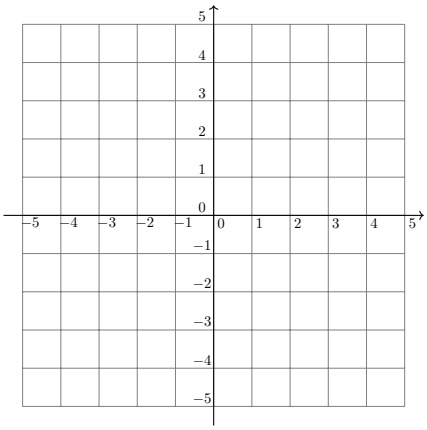
1. (4 points) Consider the vectors **A** and **B** on the graph below.



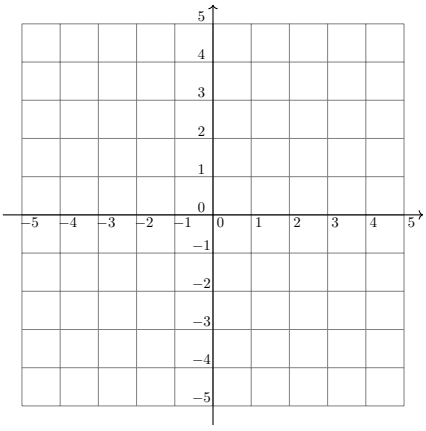
Draw the the vector **v** on the graphs below.



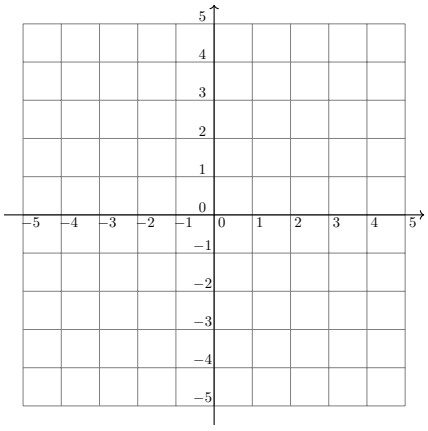
$\mathbf{v} = 2\mathbf{A}$



$\mathbf{v} = \mathbf{A} + \mathbf{B}$



$\mathbf{v} = 2\mathbf{A} - \mathbf{B}$



$\mathbf{v} = -\frac{1}{2}\mathbf{B}$

2. (3 points) Let $\mathbf{v} = \langle v_1, v_2 \rangle$ and $\mathbf{w} = \langle w_1, w_2 \rangle$. Show that for any $c \in \mathbb{R}$ we have

$$c(\mathbf{v} + \mathbf{w}) = c\mathbf{v} + c\mathbf{w}.$$

3. (3 points) Let $\mathbf{v} = \langle v_1, v_2 \rangle$ and define $\mathbf{u} = \dfrac{\mathbf{v}}{|\mathbf{v}|}$. Show that $|\mathbf{u}| = 1$.