

Homework #2. More Vectors  
Assigned: 2/12/13, Due: 2/22/13

Draw the following vectors on a Cartesian coordinate system. Label your axes (e.g. x, y).

1a.  $2\hat{i}$  1b.  $4\hat{j}$  1c.  $2\hat{i}+4\hat{j}$

2a.  $-2\hat{i}+2\hat{j}$  2b.  $2\hat{i}+2\hat{j}$  2c.  $(-2\hat{i}+2\hat{j})+(2\hat{i}+2\hat{j})$

3a.  $2\hat{j}$  3b.  $4\hat{k}$  3c.  $2\hat{j}+4\hat{k}$

Compute the magnitude and direction of following vectors.

1.  $2\hat{i}$
2.  $4\hat{j}$
3.  $2\hat{i}+4\hat{j}$
4.  $-2\hat{i}+2\hat{j}$
5.  $2\hat{i}+2\hat{j}$
6.  $(-2\hat{i}+2\hat{j})+(2\hat{i}+2\hat{j})$

Compute cross products between the following vectors

1.  $2\hat{i}\times 4\hat{j}$
2.  $2\hat{i}\times(2\hat{i}+4\hat{j})$
3.  $(2\hat{i}+4\hat{j})\times 4\hat{j}$
4.  $(-2\hat{i}+2\hat{j})\times(2\hat{i}+2\hat{j})$
5.  $(-2\hat{i}+2\hat{j})\times(4\hat{j})$

Compute the cross product between the following vectors using the determinant and co-factors.

1.  $-2\hat{i}+2\hat{j}+6\hat{k}$  and  $2\hat{i}+4\hat{j}-2\hat{k}$  Dot the resultant with each vector.
2.  $\hat{i}+8\hat{j}+2\hat{k}$  and  $7\hat{i}+5\hat{j}+3\hat{k}$  Dot the resultant with each vector.

Does anything speak to you from the results of the above problems?