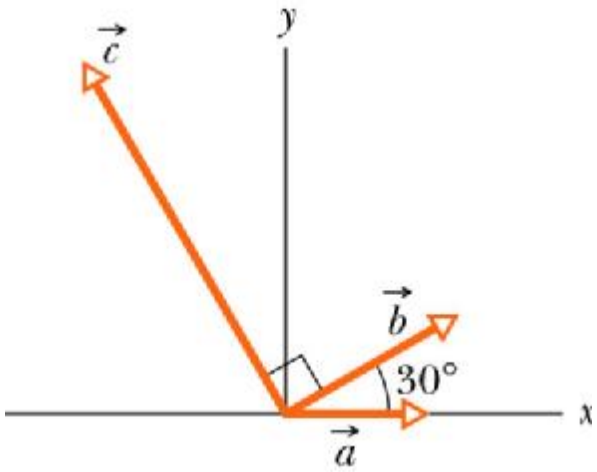
Spring (032) - Phys 101 – Sec # 5
Quiz # 2 (Ch. 3)

Name: **Key** **ID #**



The magnitudes of the vectors **a**, **b** and **c** are 3, 4, and 10 m respectively.

If $\vec{c} = m\vec{a} + n\vec{b}$, what are the values of m and n?

a = 3 **i**

b = 4 cos 30 **i** + 4 sin 30 **j** = 3.46 **i** + 2 **j**

c = 10 cos 120 **i** + 10 sin 120 **j** = -5 **i** + 8.66 **j**

Now, we find the values for m & n:

$\vec{c} = m\vec{a} + n\vec{b}$

-5 **i** + 8.66 **j** = m(3 **i**) + n (3.46 **i** + 2 **j**)

now, equate the x components on both sides to get:

-5 = 3m + 3.46 n [1]

then, equate the y components on both sides to get:

8.66 = 2 m [2] ⇒ **m = 4.33**

plug this value of m into [1] to get the value of n:

n = -6.67