

# PHYS UN1601 Recitation Worksheet 1

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## Problem 1

a) In unit-vector notation, what is  $\vec{r} = \vec{a} - \vec{b} + \vec{c}$  if  $\vec{a} = 5.0\hat{i} + 4.0\hat{j} - 6.0\hat{k}$ ,  $\vec{b} = -2.0\hat{i} + 2.0\hat{j} + 3.0\hat{k}$ , and  $\vec{c} = 4.0\hat{i} + 3.0\hat{j} + 2.0\hat{k}$ ?

b) Calculate the angle between  $\vec{r}$  and the positive  $z$  axis.

c) What is the component of  $\vec{a}$  along the direction of  $\vec{b}$ ?

d) What is the component of  $\vec{a}$  perpendicular to the direction of  $\vec{b}$  but in the plane of  $\vec{a}$  and  $\vec{b}$ ?