

3a

Vector  $\vec{A}$  has  $x$  and  $y$  components of  $-8.70$  cm and  $15.0$  cm, respectively; vector  $\vec{B}$  has  $x$  and  $y$  components of  $13.2$  cm and  $-6.60$  cm, respectively. If  $\vec{A} - \vec{B} + 3\vec{C} = 0$ , what are the components of  $\vec{C}$ ?

3b

Consider the three displacement vectors  $\vec{A} = (3\hat{i} - 3\hat{j})$  m,  $\vec{B} = (\hat{i} - 4\hat{j})$  m, and  $\vec{C} = (-2\hat{i} + 5\hat{j})$  m. Use the component method to determine (a) the magnitude and direction of the vector  $\vec{D} = \vec{A} + \vec{B} + \vec{C}$  and (b) the magnitude and direction of  $\vec{E} = -\vec{A} - \vec{B} + \vec{C}$ .

3c

Two vectors  $\vec{A}$  and  $\vec{B}$  have precisely equal magnitudes. For the magnitude of  $\vec{A} + \vec{B}$  to be 100 times larger than the magnitude of  $\vec{A} - \vec{B}$ , what must be the angle between them?