University Physics with Modern Physics, 14/e
Young/Freedman
Chapter 1 Key Equations

$$R_x = A_x + B_x, \quad R_y = A_y + B_y \quad \text{(components of } \vec{\boldsymbol{R}} = \vec{\boldsymbol{A}} + \vec{\boldsymbol{B}}\text{)} \tag{1.9}$$

$$\begin{aligned} \vec{\boldsymbol{A}} &= A_x\hat{\imath} + A_y\hat{\imath} + A_z\hat{k} \\ \vec{\boldsymbol{B}} &= B_x\hat{\imath} + B_y\hat{\jmath} + B_z\hat{k} \end{aligned} \tag{1.14}$$

$$\vec{\boldsymbol{A}} \cdot \vec{\boldsymbol{B}} = AB\cos\phi = |\vec{\boldsymbol{A}}||\vec{\boldsymbol{B}}|\cos\phi \quad \text{(definition of the scalar (dot) product)} \tag{1.16}$$

$$\vec{\boldsymbol{A}} \cdot \vec{\boldsymbol{B}} = A_xB_x + A_yB_y + A_zB_z \quad \text{(scalar (dot) product in terms of components)} \tag{1.19}$$

$$C = AB\sin\phi \quad \text{(magnitude of the vector (cross) product of } \vec{\boldsymbol{A}} \text{ and } \vec{\boldsymbol{B}}\text{)} \tag{1.20}$$

$$\begin{gathered} C_x = A_yB_z - A_zB_y \qquad C_y = A_zB_x - A_xB_z \qquad C_z = A_xB_y - A_yB_x \\ \text{(components of } \vec{\boldsymbol{C}} = \vec{\boldsymbol{A}} \times \vec{\boldsymbol{B}}\text{)} \end{gathered} \tag{1.25}$$