1. Vector \( \mathbf{A} \) has magnitude 15 and vector \( \mathbf{B} \) has magnitude 7.
   
   a) Find x and y components of vector \( \mathbf{A} \).
   b) Find x and y component of vector \( \mathbf{B} \).
   c) Find the unit-vector expression for the vector \( \mathbf{A} \), vector \( \mathbf{B} \) and the resultant vector \( \mathbf{A}+\mathbf{B} \).
   d) Find the magnitude and direction of the resultant vector \( \mathbf{A}+\mathbf{B} \).

2. Two forces act on an object. A 200N force is directed 60 south of east and a 120N force is directed west. A third force is applied and balances to zero the effects of the other two.
   
   a) On an x-y right-hand coordinate system, sketch all three vectors.

   Report the third vector in
   
   b) magnitude/angle notation. c) unit vector notation
3. A sailboat sets out from the U.S side of Lake Erie for a point on the Canadian side, 90.0 km due north. The sailor, however, ends up 50.0 km due east of the starting point.
   a) How far and
   b) In what direction must the sailor now sail to reach the original destination?