

1 Sailing distance

- (a) You sail 3 nautical miles 10° north of west and 7 nautical miles due north.
- Construct vectors that model the legs of your journey.
 - How far are you from where you started?
- (b) Time to head back
- Construct a vector that represents your return trip.
 - Add the three vectors you have constructed.
 - Explain why the sum is reasonable in terms a sailor can understand.

2 Vectors

Find a single vector with *all* of the following properties:

- (a) Magnitude 10
- (b) Angle of 45° with positive x -axis
- (c) Angle of 60° with positive y -axis
- (d) Positive z -component

3 The Cube

Find the angle between the diagonal of a cube (connecting opposite corners) and the diagonal of one of its faces (connecting opposite corners of one square face).