

3. A cruise liner travels out of a harbor at a direction of 110° with an average speed of 35 knots. In your work on this task, use a standard coordinate system with the harbor located at the origin.

a. In which quadrant will the position vector representing the ship's course be located?

b. Find the coordinates of the position of the cruise liner after 4 hours of travel.

c. Suppose that after traveling for 4 hours, the ship has mechanical problems and must go directly to a port located at $(-75 \text{ nm}, 75 \text{ nm})$. What position vector represents the direct path from the location after 4 hours of travel to the port for repairs?

d. If the ship can still travel at 35 knots, how long will it take to get to the port for repairs?

e. Through what angle must the ship turn in order to travel directly to the port?