Given three vectors
\[ \mathbf{A} = 3.75\hat{i} - 4.75\hat{j} \]
\[ \mathbf{B} = -5.85\hat{i} + 2.75\hat{j} \]
\[ \mathbf{C} = -6.25\hat{i} - 8.75\hat{j} \]

(a) Calculate \( \mathbf{A} + \mathbf{C} \) (in \( \hat{i}, \hat{j} \) notation).
(b) Calculate \( \mathbf{B} - \mathbf{C} \) (in \( \hat{i}, \hat{j} \) notation).
(c) Calculate the magnitude of \( \mathbf{A} \).
(d) Calculate the direction of \( \mathbf{C} \), expressed as an angle measured counterclockwise from the positive x-axis.

\[ \mathbf{A} + \mathbf{C} = 3.75\hat{i} + (-4.75 + 8.75)\hat{j} = 3.75\hat{i} + 4.00\hat{j} \]

\[ \mathbf{B} - \mathbf{C} = -5.85\hat{i} + (2.75 + 8.75)\hat{j} = -5.85\hat{i} + 11.50\hat{j} \]

\[ |\mathbf{A}| = \sqrt{(3.75)^2 + (4.75)^2} = 6.052 \]

\[ \tan \theta = \frac{n\hat{j}}{m\hat{i}} \]
\[ \theta = \tan^{-1}\left(\frac{8.75}{6.25}\right) = 54.46^\circ \]
Expressed as an angle measured counterclockwise from the positive x-axis.

\[ \phi = 180^\circ + 54.46^\circ = 234.56^\circ \]