

$$1) \quad \vec{AB} = \begin{pmatrix} -4 \\ 7 \end{pmatrix} - \begin{pmatrix} 3 \\ 4 \end{pmatrix}$$

$$= \begin{pmatrix} -7 \\ 3 \end{pmatrix}$$

$$\underline{\underline{-7i + 3j}}$$

$$b) \quad |\vec{AB}| = \sqrt{7^2 + 3^2}$$

$$= \underline{\underline{\sqrt{58}}}$$

$$2) \quad |3i + kj| = 3\sqrt{17}$$

$$\sqrt{3^2 + k^2} = 3\sqrt{17}$$

$$3^2 + k^2 = 153$$

$$k^2 = 144$$

$$k = \underline{\underline{\pm 12}}$$

$$3) \quad \vec{AB} = \begin{pmatrix} -8 \\ 2 \end{pmatrix} - \begin{pmatrix} -5 \\ 7 \end{pmatrix}$$

$$= \begin{pmatrix} -3 \\ -5 \end{pmatrix}$$

$$\underline{\underline{-3i - 5j}}$$

$$b) \quad |\vec{AB}| = \sqrt{3^2 + 5^2}$$

$$= \underline{\underline{\sqrt{34}}}$$

$$4) \quad \begin{pmatrix} -5 \\ 7 \end{pmatrix} + \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -2 \\ -3 \end{pmatrix}$$

$$x = -2 + 5 = \underline{\underline{3}}$$

$$y = -3 - 7 = \underline{\underline{-10}}$$

$$x = 3 \quad y = -10$$

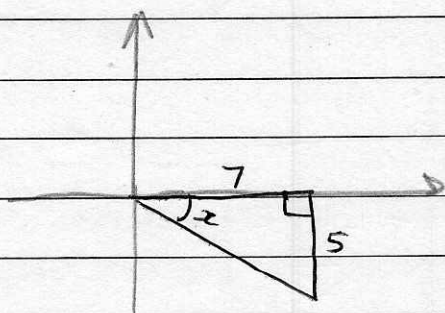
$$\begin{aligned}
 5a) \quad \vec{BC} &= \vec{AC} - \vec{AB} \\
 &= \begin{pmatrix} 8 \\ -5 \end{pmatrix} - \begin{pmatrix} 6 \\ 2 \end{pmatrix} \\
 &= \begin{pmatrix} 2 \\ -7 \end{pmatrix}
 \end{aligned}$$

$$\begin{aligned}
 b) \quad |\vec{AB}| &= \sqrt{6^2 + 2^2} \\
 &= \underline{\underline{2\sqrt{10}}}
 \end{aligned}$$

$$\begin{aligned}
 6) \quad \begin{pmatrix} -5 \\ 7 \end{pmatrix} + \begin{pmatrix} 4 \\ 6 \end{pmatrix} + \begin{pmatrix} 3 \\ -5 \end{pmatrix} &= \begin{pmatrix} 2 \\ 8 \end{pmatrix} \\
 \underline{\underline{2i + 8j}}
 \end{aligned}$$

$$\begin{aligned}
 7) \quad \text{speed} &= \sqrt{7^2 + 5^2} \\
 &= \underline{\underline{\sqrt{74} \text{ ms}^{-1}}}
 \end{aligned}$$

b/



$$\begin{aligned}
 \tan x &= \frac{5}{7} \\
 x &= \tan^{-1}\left(\frac{5}{7}\right) \\
 &= 35.5^\circ
 \end{aligned}$$

$$\begin{aligned}
 \text{Bearing} &= 90 + 35.5 \\
 &= \underline{\underline{126^\circ}} \quad (\text{Nearest degree})
 \end{aligned}$$