

### 'Monitoring Currents'

$$\text{a) } 5^2 + 6^2 + (k - 10)^2 = (5\sqrt{5})^2$$

$$(k - 10)^2 = 64$$

$$k = 2 \text{ and } k = 18$$

[3 marks]

$$\text{b) } \vec{OA} = (-1, 7, 18)$$

$$|OA| = \sqrt{1^2 + 7^2 + 18^2} = \sqrt{374}$$

$$\text{thus the unit vector} = \frac{1}{\sqrt{374}}(-i + 7j + 18k)$$

[3 marks]