

'Mountainside Monitoring'

$$\text{a) } |KL| = \sqrt{3^2 + (-6)^2} = 3\sqrt{5}$$

$$|LM| = \sqrt{2^2 + 5^2 + 4^2} = 3\sqrt{5}$$

$$\vec{KM} = 5\mathbf{i} + 5\mathbf{j} - 2\mathbf{k}$$

$$|KM| = \sqrt{5^2 + 5^2 + (-2)^2} = 3\sqrt{6}$$

$$|KM|^2 = |LM|^2 + |KL|^2 - 2|LM||KL|\cos(\angle KLM)$$

$$\cos(\angle KLM) = \frac{2}{5}$$

$$\angle KLM = 66.4(2182152) = 66.4(1 \text{ d. p.})$$

[7 marks]

$$\text{b) } \cos(\angle LKM) = \frac{\sqrt{30}}{10}$$

$$\angle LKM = 56.7(8908924) = 56.8(1 \text{ d.p.})$$

$$\angle LMK = 56.7(8908924) = 56.8(1 \text{ d.p.})$$

[3 marks]