

Bài 7:

Góc tạo bởi  $\vec{u}(-1, 1, 2)$  và  $\vec{v}(-1, 2, 1)$

$$\cos \alpha = \frac{\vec{u} \cdot \vec{v}}{\|\vec{u}\| \cdot \|\vec{v}\|}$$

$$\Rightarrow \cos \alpha = \frac{5}{6} \Rightarrow \alpha = \cos^{-1} \frac{5}{6} \approx 33,56^\circ$$

Bài 8:

$P(3, -1, 1)$ ,  $Q(4, 1, 4)$ ,  $R(6, 0, 4)$

$$\vec{PQ} = (1, 2, 3)$$

$$\vec{PR} = (3, 1, 3)$$

$$\vec{QR} = (2, -1, 0)$$

$$\text{Ta có } \vec{PQ} \cdot \vec{QR} = 0$$

$$\Rightarrow \vec{PQ} \perp \vec{QR}$$

$\Rightarrow P, Q, R$  tạo thành tam giác vuông

Bài 9:

$$\text{proj}_{\vec{d}} \vec{u} = \frac{\vec{u} \cdot \vec{d}}{\|\vec{d}\|^2} \cdot \vec{d}$$

$$= \left( \frac{2}{11}; \frac{-2}{11}; \frac{6}{11} \right)$$

$$\vec{u}_1 = \text{proj}_{\vec{d}} \vec{u} = \left( \frac{2}{11}; \frac{-2}{11}; \frac{6}{11} \right)$$

$$\vec{u}_2 = \vec{u} - \vec{u}_1 = \left( \frac{9}{11}; \frac{3}{11}; \frac{5}{11} \right)$$