5.19

den 23 januari 2011
10:58

a) $\overrightarrow{P_1P_2} = (1,1,2)$ ; $\overrightarrow{P_1P_3} = (1,2,1)$

$$\overrightarrow{P_1P_2} \times \overrightarrow{P_1P_3} = (1,1,2) \times (1,2,1) = (-3,1,1)$$

$$\text{area} = \frac{|(-3,1,1)|}{2} = \frac{\sqrt{11}}{2}$$

b) $\overrightarrow{P_1P_4} = (2,1,1)$

Normal till triangelytan: $(-3,1,1)$

Vinkel mellan

$$\cos\alpha = \frac{(2,1,1)\cdot(-3,1,1)}{|(2,1,1)|\cdot|(-3,1,1)|} = \frac{-6+1+1}{\sqrt{6}\cdot\sqrt{11}} =$$

$$= \frac{-4}{\sqrt{6}\sqrt{11}} < 0 \quad \text{så } \alpha \text{ trubbig}$$

Vi väljer $\pi - \alpha$ dvs

$$\arccos \frac{4}{\sqrt{6}\sqrt{11}}$$