

$$\pi_1: x - y - z = 3, \text{ normal } (1, -1, -1)$$

$$\text{Välj } \hat{e}_3 = \frac{1}{\sqrt{3}} (1, -1, -1)$$

\hat{e}_1 vinkelrät mot \hat{e}_3 och parallell med planet

$$\pi_2: x + y + 2z = 5 \text{ med normal } (1, 1, 2)$$

Alltså kan vi välja \hat{e}_1 i riktning

$$(1, -1, -1) \times (1, 1, 2) = (-1, -3, 2)$$

$$\text{Välj } \hat{e}_1 = \frac{1}{\sqrt{14}} (-1, -3, 2)$$

$$\hat{e}_2 = \hat{e}_3 \times \hat{e}_1 = \frac{1}{\sqrt{3}} (1, -1, -1) \times \frac{1}{\sqrt{14}} (-1, -3, 2)$$

$$= \frac{1}{\sqrt{3}\sqrt{14}} (-5, -1, -4)$$

Koordinaterna för vektorn $(1, 2, 3)$ i $\hat{e}_1, \hat{e}_2, \hat{e}_3$

$$\hat{x}_1 = (1, 2, 3) \cdot \hat{e}_1 = (1, 2, 3) \cdot \frac{1}{\sqrt{14}} (-1, -3, 2)$$

$$\begin{aligned}\hat{x}_1 &= (1, 2, 3) \cdot e_1 = (1, 2, 3) \cdot \frac{1}{\sqrt{14}} (-1, -3, 2) \\ &= \frac{1}{\sqrt{14}} (-1 - 6 + 6) = \underline{\underline{\frac{-1}{\sqrt{14}}}}\end{aligned}$$

$$\hat{x}_2 = (1, 2, 3) \cdot e_2 = \dots = \underline{\underline{\frac{-19}{\sqrt{42}}}}$$

$$\hat{x}_3 = (1, 2, 3) \cdot e_3 = \dots = \underline{\underline{\frac{-4}{\sqrt{3}}}}$$