

Höger. Beräkna trippelintegralen:

$$\iiint_K z \, dx dy dz$$

då K ges av:

$$2z^2 + y \leq x \leq 2z^2 + y + 3$$

$$-1 \leq y \leq 1$$

$$0 \leq z \leq 1$$

$$\begin{aligned} \iiint_K z \, dx dy dz &= \iint_{\substack{-1 \leq y \leq 1 \\ 0 \leq z \leq 1}} \left(\int_{x=2z^2+y}^{2z^2+y+3} z \, dx \right) dy dz = \\ &= \iint_{\substack{-1 \leq y \leq 1 \\ 0 \leq z \leq 1}} 3z \, dy dz = 2 \left(\frac{3z^2}{2} \Big|_{z=0}^1 \right) = 3 \end{aligned}$$

Vänster. Beräkna trippelintegralen:

$$\iiint_K y \, dx dy dz$$

då K ges av:

$$z^2 + y \leq x \leq z^2 + y + 4$$

$$0 \leq y \leq 1$$

$$-1 \leq z \leq 1$$

$$\begin{aligned} \iiint_K y \, dx dy dz &= \iint_{\substack{0 \leq y \leq 1 \\ -1 \leq z \leq 1}} \left(\int_{x=z^2+y}^{z^2+y+4} y \, dx \right) dy dz = \\ &= \iint_{\substack{0 \leq y \leq 1 \\ -1 \leq z \leq 1}} 4y \, dy dz = 2(2y^2|_{y=0}) = 4 \end{aligned}$$