> $with(VectorCalculus) : with(LinearAlgebra) :$

> $J := Jacobian([a \cdot r \cdot \sin(\text{theta}) \cdot \cos(\text{phi}), b \cdot r \cdot \sin(\text{theta}) \cdot \sin(\text{phi}), c \cdot r \cdot \cos(\text{theta})], [r, \text{theta}, \text{phi}])$

$$J := \begin{bmatrix} a \sin(\theta) \cos(\phi) & a\, r \cos(\theta) \cos(\phi) & -a\, r \sin(\theta) \sin(\phi) \\ b \sin(\theta) \sin(\phi) & b\, r \cos(\theta) \sin(\phi) & b\, r \sin(\theta) \cos(\phi) \\ c \cos(\theta) & -c\, r \sin(\theta) & 0 \end{bmatrix} \quad (1)$$

> $J := Determinant(J)$

$$J := a \sin(\theta)^3 \cos(\phi)^2 b\, r^2 c + b \sin(\theta)^3 \sin(\phi)^2 a\, r^2 c + \sin(\theta) \cos(\phi)^2 \cos(\theta)^2 a\, b\, c\, r^2 + \sin(\theta) \sin(\phi)^2 \cos(\theta)^2 a\, b\, c\, r^2 \quad (2)$$

> $result := simplify(J)$

$$result := a\, b\, c\, r^2 \sin(\theta) \quad (3)$$

> *# Dit is de jacobiaan bitches*

> *# In een sferische situatie is r: 0..1, phi:0..2pi, theta:0..pi*

> $output := int(int(int(result, r = 0..1), \text{theta} = 0..\text{Pi}), \text{phi} = 0..2 \cdot \text{Pi})$

$$output := \frac{4\, a\, b\, c\, \pi}{3} \quad (4)$$

> $simplify(output)$

$$\frac{4\, a\, b\, c\, \pi}{3} \quad (5)$$

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