

## Formulas list

$$x = \rho \cos(\theta) \sin(\phi), y = \rho \sin(\theta) \sin(\phi), z = \rho \cos(\phi), dV = \rho^2 \sin(\phi) d\rho d\phi d\theta ,$$

$$\vec{r}_\phi \times \vec{r}_\theta = a \sin(\phi)(x\vec{i} + y\vec{j} + z\vec{k}), \|\vec{r}_\phi \times \vec{r}_\theta\| = a^2 \sin(\phi)$$

$$dS = \sqrt{1 + g_x^2 + g_y^2} dD$$

$$dS = \|\vec{r}_u \times \vec{r}_v\| dD$$

$$\iint_S \vec{F} \cdot d\vec{S} = \iint_S \vec{F} \cdot \vec{n} dS$$

$$\iint_S (P\vec{i} + Q\vec{j} + R\vec{k}) \cdot d\vec{S} = \iint_D -P g_x - Q g_y + R dD$$

$$\iint_S \vec{F} \cdot d\vec{S} = \iint_D \vec{F} \cdot (\vec{r}_u \times \vec{r}_v) dD$$