

**Theorem** For all  $n \in \mathbb{N}$ :

$$\sum_{i=0}^n i = \frac{n(n+1)}{2}$$

**Theorem** For all  $n \in \mathbb{N}$ :

$$\sum_{i=0}^n i^2 = \frac{n(n+1)(2n+1)}{6}$$

**Theorem** (Divergence theorem) For any volume  $V$  and continuously differentiable vector field  $\mathbf{F}$ :

$$\iiint_V \nabla \cdot \mathbf{F} dV = \oiint_{\partial V} \mathbf{F} \cdot d\mathbf{S}$$

where  $\partial V$  is the border of  $V$ .

**Definition** (Fibonacci sequence) Let  $u_n$  be the sequence defined by:

$$\begin{cases} u_0 &= 1 \\ u_1 &= 1 \\ u_{n+2} &= u_{n+1} + u_n, \forall n \in \mathbb{N} \end{cases}$$

**Theorem** For all  $n \in \mathbb{N}$ :

$$u_n = \frac{\phi^n - \psi^n}{\phi - \psi}$$

where  $\phi$  and  $\psi$  are the roots of  $x^2 - x - 1$ .