

Mathematical Induction

$P(n) = 1 + 2 + \dots + n = \frac{n(n+1)}{2}$

Base Case: $n=1$
 $P(1) = 1 = \frac{1(1+1)}{2} = 1$

Inductive Step: Assume $P(k)$ is true.

Prove $P(k+1)$ is true.
 $P(k+1) = 1 + 2 + \dots + k + (k+1)$

$= \frac{k(k+1)}{2} + (k+1)$