

g) $n=1$ $\sum_{k=1}^1 \frac{k}{2^k} = \frac{1}{2} = 2 - \frac{3}{2}$ ✓

$n \checkmark \Rightarrow n+1 \checkmark$

hyp de réc.

$$\sum_{k=1}^{n+1} \frac{k}{2^k} = 2 - \frac{n+2}{2^n} + \frac{n+1}{2^{n+1}}$$

$$= 2 - \left(\frac{2(n+2) - (n+1)}{2^{n+1}} \right)$$

$$= 2 - \left(\frac{2n+4-n-1}{2^{n+1}} \right)$$

$$= 2 - \frac{n+3}{2^{n+1}} = 2 - \frac{n+1+2}{2^{n+1}}$$

CQFD