

$$f(n) = n^2$$

Base

$$f(0) = 0 \\ = 0^2 \quad \square$$

Inductive

I.H

$$f(k) = k^2$$

$$\begin{aligned} f(k+1) &= 2(k+1)-1 + f(k) \\ &= 2k+2-1 + f(k) \\ &= 2k+1 + f(k) = 2k+1+k^2 \\ &= k^2+2k+1 \\ &= (k+1)^2 \end{aligned} \quad \square$$

Base Case $\text{sum } [] = 0 \quad (1)$

$$= 0$$

$$= \text{foldr } (+) 0 [] \quad (A) \quad \square$$

Inductive Case $\text{l.t.l) sum } k = \text{foldr } (+) 0 k$

$$\begin{aligned} \text{sum } (x:k) &= x + \text{sum } k \\ &= x + \text{foldr } (+) 0 k \\ &= x + \text{foldr } (+) 0 k \\ &= \text{foldr } (+) 0 (x:k) \quad \square \end{aligned}$$