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

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

Inductive **I.H** $f(k) = k^2$

$$f(k+1) = 2(k+1) - 1 + f(k)$$
$$= 2k + 2 - 1 + f(k)$$
$$= 2k + 1 + f(k) = 2k + 1 + k^2$$
$$= k^2 + 2k + 1$$
$$= (k+1)^2 \qquad \square$$

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

$$= 0$$

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

↗

Inductive Case $1.+1)$ $\text{sum } k = \text{foldr } (+) \ 0 \ k$

$$\text{sum } (x:k) = x + \text{sum } k$$

$$= x + \text{foldr } (+) \ 0 \ k$$

$$= x + \text{foldr } (+) \ 0 \ k$$

$$= \text{foldr } (+) \ 0 \ (x:k) \qquad ∎$$