qpq

$$\text{length2} = \text{length1}$$

$$\text{length2} \underset{\{\text{L2}\}}{=} = \text{foldr (\textbackslash\_ res} \to \text{1+res)}$$

$$\text{Por extensionalidad, basta con probar } \forall \text{ xs } ...[a]$$

$$\text{Por inducción en xs}$$

$$P(\text{xs}) : \text{(foldr (\textbackslash\_ res} \to \text{1+res) 0) xs} = \text{length1 xs}$$

Caso base:

$$\text{foldr (\textbackslash\_ res} \to \text{1+res) 0 []} \underset{\{\text{F0}\}}{=}$$

$$\text{length1 []} \underset{\{\text{L10}\}}{=} 0$$

Paso inductivo xs = y:ys:

$$\text{HI} = P(\text{ys}) \text{ foldr(\textbackslash\_ res } \to \text{1+res 0) ys} = \text{length1 ys}$$

$$\text{TI} : P(\text{y:ys})$$

$$\text{foldr(\textbackslash\_ res} \to \text{1+res) 0 (y:ys)} = \text{length1 (y:ys)}$$

$$\underset{\{\text{F1}\}}{=} \text{(\textbackslash\_ res} \to \text{1+res) y (foldr (\textbackslash\_ res -> 1+res) 0 ys)}$$

$$\underset{2\beta}{=} \text{1+foldr (\textbackslash\_ res -> 1+res) 0 ys} \underset{\{\text{HI}\}}{=} \text{1+length1 ys} \underset{\{\text{L11}\}}{=} \text{length1 (y:ys)}\square$$