

§ 3.6 #14

Differentiate $F(y) = y \ln(1+e^y)$

Solution:

By the Product Rule: $F'(y) = y \cdot \frac{1}{1+e^y} \cdot \frac{d}{dy}(1+e^y) + 1 \cdot \ln(1+e^y)$
(# the Chain Rule)

$$= \frac{y}{1+e^y} (e^y) + \ln(1+e^y)$$

$$= \frac{ye^y}{1+e^y} + \ln(1+e^y). //$$