R06 Model Solution

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3.8.28 $y = xe^y$

Product rule: $\frac{dy}{dx} = \frac{d}{dx}(xe^y) = \frac{dx}{dx}\cdot e^y + x\frac{de^y}{dx} =$

$= e^y + xe^y\frac{dy}{dx} = e^y\left(1 + x\frac{dy}{dx}\right) \Rightarrow$

$y' = e^y(1 + xy') \Rightarrow (xe^y - 1)y' = -e^y \Rightarrow$

$y' = \frac{e^y}{1 - xe^y}$