9.1 SOLUÇÕES

1. $y = 2 + e^{-x^3} \Rightarrow y' = -3x^2 e^{-x^3}.$

$$
\begin{aligned}
\text{LHS} &= y' + 3x^2 y \\
&= -3x^2 e^{-x^3} + 3x^2 \left(2 + e^{-x^3}\right) \\
&= -3x^2 e^{-x^3} + 6x^2 + 3x^2 e^{-x^3} \\
&= 6x^2 \\
&= \text{RHS}
\end{aligned}
$$

2. $y = \dfrac{2 + \ln x}{x} \Rightarrow$

$$
y' = \frac{x(1/x) - (2 + \ln x)(1)}{(x)^2} = \frac{-1 - \ln x}{x^2} \text{ e}
$$

$$
y(1) = \frac{2 + \ln 1}{1} = 2.
$$

$$
\begin{aligned}
\text{LHS} &= x^2 y' + xy \\
&= x^2 \left(\frac{-1 - \ln x}{x^2}\right) + x \left(\frac{2 + \ln x}{x}\right) \\
&= (-1 - \ln x) + (2 + \ln x) \\
&= 1 \\
&= \text{RHS}
\end{aligned}
$$