**Problem statement** Consider the differential equations

\begin{align*}
\text{a)} & \quad \frac{dy}{dx} = 2x + 3y \\
\text{b)} & \quad \frac{dy}{dx} = e^{2x+3y} \\
\text{c)} & \quad \frac{dy}{dx} = x^3y^2 \\
\text{d)} & \quad \frac{dy}{dx} = x^2 + y^3
\end{align*}

Two of these are separable. For each of these two separable equations, solve the initial value problem with the initial condition \( y(0) = 1 \). In each case your solution should be written as \( y = f(x) \) where \( f(x) \) is a formula. Choose one of the non-separable equations and explain carefully why it is not separable.