1. Find a solution to the initial value problem

\[ \frac{dy}{dx} = e^{yx^3} \]
\[ y(0) = 0 \]

2. Find a solution to the initial value problem

\[ \frac{dy}{dx} = (1 + y^2)e^x \]
\[ y(0) = 0 \]

3. Find a solution to the initial value problem

\[ \frac{dy}{dx} = y\sqrt{y^2 - 1}\cos(x) \]
\[ y(0) = 1 \]
4. Find the general solution to the differential equation (for $x \neq 0$)

\[
x \frac{dy}{dx} = -y + x
\]

5. Find the general solution to the differential equation

\[
\frac{1}{2x} \frac{dy}{dx} = y + e^{x^2}
\]

6. Find a solution to the initial value problem

\[
\cos(x) \frac{dy}{dx} = 1 - \sin(x)y
\]
\[
y(0) = 1
\]