(1) Verify that \( y = x\sin(x) + \cos(x)\ln(\cos(x)) \) is a solution of \( y'' + y = \sec(x) \).

(2) Solve the differential equation \( dy = x^2(e^{3y} - 1)dx \).

(3) Solve the differential equation \( x \frac{dy}{dx} + y = \ln(x) \) with \( y(1) = 10 \).