Exercises of ODE's

A-Verify that each given function y is a solution of the ODE:

1- $y'+2y=0$; $y=3e^{-2x}$

2- $y''+4y=0$; $y_1=\cos 2x$, $y_2=\sin 2x$

B- Solve the following ODEs:

- $x+yy'=0$
- $x\dfrac{dy}{dx}+3y=0$
- $y'=\dfrac{x^2+7x+3}{y^2}$, $y(0)=3$

Separable equations

- $y'-y=\dfrac{11}{8}e^{-x/3}$, $y(0)=-1$
- $y'+y=2$, $y(0)=0$
- $xy'+5y=7x^2$, $y(2)=5$

integrating factor technique