Math 17B
Vogler
First Order Linear Differential Equations

1.) Solve the following first-order linear differential equations.

a.) $\dfrac{dy}{dx} + 2y = 5$

b.) $\dfrac{dy}{dx} + y = e^{3x}$

c.) $y' + 3x^2 y = x^2$

d.) $x^2 y' + xy = 1$

e.) $(1 + x^2)y' + xy + x^3 + x = 0$

f.) $xy' + (1 + x)y = e^{-x}\sin 2x$

g.) $\dfrac{dy}{dx} = y + x$

h.) $y' = 2y + xe^{2x}$ and $y(0) = 2$

i.) $\cos x \cdot \dfrac{dy}{dx} + y\sin x = 1$

j.) $y' + y = \dfrac{1 - e^{-2x}}{e^x + e^{-x}}$

k.) $(1 + x)y' - xy = x + x^2$

l.) $\cos^2 x \sin x \cdot \dfrac{dy}{dx} + y\cos^3 x = 1$