

3. Solve the following first-order equations:

(a)

[3]

$$x^3 \frac{dy}{dx} = 2y^2$$

(b)

[3]

$$\frac{dy}{dx} + \frac{y}{x+1} = \sin x$$

(c)

[3]

$$(1-x^2) \frac{dy}{dx} - xy = x$$

where $y = 1$ when $x = 0$