

1. Solve the following differential equations with the given initial conditions:

(a) $xy' - 2x^3y = 0$, where $y(0) = 4$

(b) $y' = y^2 \sin(x)$, where $y(\pi) = 2$

(c) $y'' - 6y' + 9y = 0$, where $y(0) = y(1) = 2$

2. Find the general solutions to the following:

(a) $y'' + 7y' + 6y = 0$

(b) $y'' - 4y' + 13y = 0$