

1. Find power series solutions in powers of x of each of the following differential equations.

(a) $y'' + 8x y' - 4y = 0$

(b) $y'' - x y' + (3x - 2)y = 0$

(c) $(x + 3)y'' + (x + 2)y' + y = 0$

2. Use the method of Frobenius to find solutions near $x = 0$ of each of the following differential equations.

(a) $2x^2 y'' + x y' + (2x^2 - 3)y = 0$

(b) $2x y'' + y' + 2y = 0$