

Instructions: Complete each of the following on separate, stapled sheets of paper.

1. Find power series solutions to the following ODEs at the ordinary point $x_0 = 0$.

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

(b) $y'' - y' = 0$

(c) $y'' - xy = 0$

(d) $y'' - 2xy' + y = 0$

(e) $y'' + 2xy' + 2y = 0$

(f) $y'' + x^2y = 0$

(g) $y'' - xy' + 2y = 0$

(h) $(x^2 + 3)y'' - 6y = 0$

(i) $(x^2 - 1)y'' + xy' - y = 0$

(j) $(x - 1)y'' + y' = 0$