

1. Using power series $y = \sum_{n=0}^{\infty} a_n x^n$ to solve the following DE:

a) $y'' + 2x^2 y' + 2xy = 0$

b) $(1-4x^2)y''-2xy'-16y=0$

2. Determine terms up to and including x^5 in two linearly independent power series solution of the following differential equations.

a) $y'' + 2y' + 4xy = 0$

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