

**The first part of Mathematical methods of mechanics.
Readings from Nayfeh, Perturbation Methods**

- 1. 4.1. Asymptotic Series
- 2.1.1. The Duffing Equation
- 2.2.1. A Second Order Example
- 2.4.4. Turning Point Problems
- 3.1.1. The Lindstedt-Poincaré Method
- 3.4.1. The Duffing Equation
- 4.1.1. Introduction – Prandtl’s Technique
- 4.2.2. A Second-Order Equation with Variable Coefficients
- 6.1.1. Many-Variables Version (The Derivative-Expansion Procedure)
- 6.1.2. The Two-Variable Expansion Procedure
- 6.2.3. Forced Oscillations of the Van der Pol Equation *Soft Nonresonant Excitation*
- 6.4.3. A Linear Oscillator with a Slowly Varying Restoring Force
- 7.1.3. Liouville’s Problem