Lec 11/20

Monday, November 20, 2017 10:48

$$L(y) = y'' + a_1(x)\,y' + a_2(x)\,y = 0$$

$|x| > r_0$

$x = \frac{1}{t}$

$\tilde{a}_1(t) = a_1\left(\frac{1}{t}\right)$, etc.

$$\frac{d\tilde{\phi}}{dt} = \frac{d\phi}{dx}\left(\frac{1}{t}\right)\frac{dx}{dt} = -\frac{1}{t^2}\frac{d\phi}{dx}\left(\frac{1}{t}\right) \quad \Rightarrow \quad \frac{d\phi}{dx}\left(\frac{1}{t}\right) = -t^2\frac{d\tilde{\phi}}{dt}$$

$$\frac{d^2\tilde{\phi}}{dx^2}\left(\frac{1}{t}\right) = t^4\frac{d^2\tilde{\phi}}{dt^2} + 2t^3\frac{d\tilde{\phi}}{dt}$$

So eqn is equivalent to: