Repeated Roots: Differentiation

PFE: Complex Roots
Example

\[ v_i(t) = \sin(2t) u(t) \]

\[ L = 500\text{mH}, \quad C = 500\mu\text{F}, \quad R = 2\Omega \]

\[ v_c(0) = 5\text{V}, \quad i_L(0) = -2\text{A} \]