

# Method of Undetermined Coefficients:

$$ay'' + by' + cy = h(t)$$

$$y(t) = y_p(t) + y_h(t)$$

Form of function $h(t)$	Geuss for $y_p(t)$
$\sum_{j=0}^N B_j t^j$	$\sum_{j=0}^N A_j t^j$
$e^{\lambda t}$	$Ae^{\lambda t}$
$\sin \omega t$ or $\cos \omega t$	$A \sin \omega t + B \cos \omega t$
$e^{\lambda t} \sin \omega t$ or $e^{\lambda t} \cos \omega t$	$e^{\lambda t} A \sin \omega t + e^{\lambda t} B \cos \omega t$
Additive combinations of above	Additive combinations of above
Multiplicative combinations of above	Multiplicative combinations of above
Part of the homogeneous solution <sup>Note<sup>1</sup></sup>	$Ath(t)$ or $At^2h(t)$ or ...
Anything else	You are out of luck

<sup>1</sup>Note: This corresponds to resonance.

<sup>2</sup>Note:  $b_j$ ,  $c_j$ ,  $b$ ,  $c$ ,  $A$ , and  $B$  are all constants in the above table