Form of Particular Solution

(Adapted from Table 3.1 of Kohler and Johnson)

The right-hand column gives the proper form to assume for a particular solution of $ay'' + by' + cy = g(t)$. In the right-hand column, choose r to be the smallest nonegative integer such that no term in the assumed form is a solution of the homogeneous equation $ay'' + by' + cy = 0$. The value of r will be 0, 1, or 2.

Form of $g(t)$	Form to Assume for a Particular Solution $y_p(t)$.
$a_n t^n + \cdots + a_1 t + a_0$	$t^r \left[A_n t^n + \cdots A_1 t + A_0\right]$
$\left[a_n t^n + \cdots + a_1 t + a_0\right] e^{\alpha t}$	$t^r \left[A_n t^n + \cdots A_1 t + A_0\right] e^{\alpha t}$
$\left[a_n t^n + \cdots + a_1 t + a_0\right] \sin \beta t$ or $\left[a_n t^n + \cdots + a_1 t + a_0\right] \cos \beta t$	$t^r \left[\left(A_n t^n + \cdots A_1 t + A_0\right) \sin(\beta t) + \left(B_n t^n + \cdots B_1 t + B_0\right) \cos(\beta t)\right]$
$e^{\alpha t} \sin(\beta t)$ or $e^{\alpha t} \cos(\beta t)$	$t^r \left[A e^{\alpha t} \sin(\beta t) + B e^{\alpha t} \cos(\beta t)\right]$
$e^{\alpha t} \left[a_n t^n + \cdots + a_0\right] \sin \beta t$ or $e^{\alpha t} \left[a_n t^n + \cdots + a_0\right] \cos \beta t$	$t^r \left[\left(A_n t^n + \cdots + A_0\right) e^{\alpha t} \sin(\beta t) + \left(B_n t^n + \cdots + B_0\right) e^{\alpha t} \cos(\beta t)\right]$