

Solve the following for the total solution using the method of undetermined coefficients:

$$\ddot{y} + 4y = 8t^2 \qquad y(0) = 1, \dot{y}(0) = 0;$$

The following table may be useful:

Term on RHS	Particular Solution
$ke^{\gamma x}$	$Ce^{\gamma x}$
$kx^n \ (n = 0, 1, \dots)$	$K_n x^n + K_{n-1} x^{n-1} + \dots + K_1 x + K_0$
$k \cos \omega x$	$\left. \begin{array}{l} K \cos \omega x + M \sin \omega x \\ \\ \end{array} \right\}$
$k \sin \omega x$	
$ke^{\alpha x} \cos \omega x$	$\left. \begin{array}{l} \\ \\ \end{array} \right\} e^{\alpha x} (K \cos \omega x + M \sin \omega x)$
$ke^{\alpha x} \sin \omega x$	