Method of Undetermined Coefficients
Math 285, Spring 2012

Instructions: For each set of solutions and forcing term, find the Ansatz you would use in the method of undetermined coefficients.

#	y_1	y_2	g(t)	Ansatz
1	e^{2t}	e^{3t}	sin(t)	$A\cos(t) + B\sin(t)$
2	e^{-t}	e^{2t}	e^{t}	Ae^{t}
3	$\frac{1}{t}$	$\frac{\ln t}{t}$	t	$At + B$
4	e^{-t}	te^{-t}	e^{-t}	At^2e^t
5	$e^{-2t}\sin 4t$	$e^{-2t}\cos 4t$	e^{-2t}	Ae^{-2t}
6	$e^{t}\sin t$	$e^{t}\cos t$	$\cos t$	$A\cos(t) + B\sin(t)$
7	$e^{-t}\sin t$	$e^{-t}\cos t$	$e^{-t}\cos 2t$	$Ae^{-t}\cos(2t) + Ee^{-t}\sin(2t)$
8	$e^{-5t}\sin\frac{1}{2}t$	$e^{-5t}\cos\frac{1}{2}t$	$e^{-5t}\sin\frac{1}{2}t$	$Ate^{-5t}\cos\left(\frac{1}{2}t\right) + Bte^{-5t}\sin\left(\frac{1}{2}t\right)$
9	t	t^2	t	At^3
10	sin(t)	cos(t)	csc(t)	Requires variation of parameters
11	sin(2t)	cos(2t)	cos(2t)	$At\cos(2t) + Bt\sin(2t)$
12	e^{2t}	e^{3t}	$\sin t + e^{2t}$	$A\cos(t) + B\sin(t) + Ce^{2t}$
13	e^{-t}	e^{2t}	$t^4 + e^{-t}\sin\sqrt{3}t$	$At^4 + Bt^3 + Ct^2 + Dt + E + Fe^{-t}\cos(\sqrt{3}t)$ $+ Ge^{-t}\sin(\sqrt{3}t)$
14	$e^{t}\sin t$	$e^{t}\cos t$	$te^{t} + 4$	$(At + B)e^t + C$
15	$e^{t}\sin t$	$e^{t}\cos t$	$t + e^{t}\sin t$	$At + B + Cte^t\cos(t) + Dte^t\sin(t)$
16	$e^{-2t}\sin 4t$	$e^{-2t}\cos 4t$	$e^{-2t} + \cos 4t + e^{-2t}\sin 4t$	$A\cos(4t) + B\sin(4t) + Ce^{-2t} + De^{-2t}\cos(4t)$ $+ Ee^{-2t}\sin(4t)$
17	e^{-t}	e^{2t}	$\cosh t$	$Ae^t + Bte^{-t}$ OR $(At + B)\cosh(t) + (Ct + D)\sinh(t)$