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0	Day 106033 33 13 1232
0	
0	<b>\</b>
0	j"+69'+89 = 47.5 cos zt
0	
0	e => Homogeneous
0	z"+6z'+8z-0.
0	2 dit dit
0	Guess Dh = Cie + Cz et
U	let j= edt
0	Lext 6 de dt gedt
0	$(2+6d+8)e^{de}=0$
0	$(x+0x+0)e = 0$ $(x+4)(b+2)e^{x+2}$
0	$\frac{(x+1)(x+2)}{x^2-4-2}$
0	$\Rightarrow \partial_h = C_1 e^{-4t} - zt$
0	
U	-> Nonhomogeneous
0	7"+67+87= 42.5 cos 2t
0	· Guess Dp = K cos 2t + M sin 2t.
0	7'= 2Ksin st + 2M.cos 2t
0	) = -4K. cos 2t -4M sin 2t
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(-4 Kcos zt -4 M sin zt) +6(-2K sin zt +2 Mcos zt) +8(K-coszt+Msinzt)=425 coszt (-4K+12M+8K) COS 2t+ (-4M-12K+8M) sinzt 4K+12M=42.5 4K+36K=425 11 M= 51 , 2= 10 coszt + M=3K => Steady State Solution JP = 1/1 cos zt+ 5/ sin zt # 7 = C, e-4t+

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2'= -41M sin 4t + 4/2 cos 4t	
3"= -46 M cos 4t - 16 K sin 4t	-/ -/ -/
(-16 M ws 4t - 16 K sin4t) + 16 C M cos 4t + K sin 4t) = 56 cos 4t	
= M cos 4t + Ksin 4t) = 56 cos 4t	9
Guess dp=ext (A cos 4t + is sin 4t)	
- ( P tos Q + + B SIN 4+)	
) = de - A - cos 4t - 40 de A sin 11t	9
) = de - A - cos 4t - 4ed - A sin 4t + de B - Sin 4t + 4 ed B cos 4t	
7" = 2° e · A cos 4t - 4xed A sin 4t - 4xed A sin 4t - 4xed A sin 4t - 16ed A cos 4t	
+ dedt A sin 4t - 16e dt A cos 4t + dedt B sin 4t + 4dedt B cos 4t	
+ 4dedt B cos 4t - 16e xt B sin 4t	)
= (d2 dt A - 16 edt A + 4 de dt B + 4 de dt B)	ノ.
· cos 4t + (-4 ded A - 4 ded A + 2 dt "	
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(2) A - 16A + 4 & B + 4 & B) e dt cos 4t  + (-4dA - 4d A + & B - 16B) e dt sin 4t  + 16 e dt A . cos 4t + 16 e dt B . sin 4t  - 56 cos 4t  Thus, d = 0  (22 A - 16 A + 8 & B) + 16 A = 56  (23 A - 16 B - 8 & A) + 16 B = 0  (23 A + 8 & B = 56  24 B - 8 & A = 0  Shere is no solution for A, B, d  huess J = t (A cos 4t + B sin 4t)
+ (-4dA - 4d A + d'B - 16B) e sin 4t  1 16 e dt A . cos 4t + 16 e dt B . sin 4t  - 56 cos 4t  Thus, d = 0  (d'A - 16A + 8dB) + 16A - 56  (d'B - 16B - 8dA) + 16B - 0  Sd'A + 8dB = 56  d'B = 8dA = 0  Smere is no solution for A, B, d  Juess J = t (A cos 4t + B sin 4t)
Thus, $d = 0$ $(d^{2}A - 16A + 8dB) + 16A = 56$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) = 56$ $(d^{2}B - 16B - 8dA) = 66$ $(d^$
Thus, $d = D$ $ \begin{cases} (d^2A - 16A + 8 \times B) + 16A = 56 \end{cases} $ $ (d^2B - 16B - 8dA) + 16B = D $ $ \begin{cases} d^2A + 8 \times B = 56 \end{cases} $ $ \begin{cases} d^2B - 8dA = D \end{cases} $ $ \Rightarrow Mere is no solveion for A, B, d $ $ Auess J = 1 (A cos 4t + B sin 4t) $
$ \begin{array}{c} \left(\left(\frac{\lambda^{2}A-16A+8\lambda B}{4+8\lambda B}\right)+16A=56\\ \left(\left(\frac{\lambda^{2}B-16B-8\lambda A}{4+8\lambda B}\right)+16B=0\\ \left(\left(\frac{\lambda^{2}A+8\lambda B}{4+8\lambda B}\right)+16B=0\\ \left(\left(\frac{\lambda^{2}A-16B-8\lambda A}{4+8\lambda B}\right)+16B=0\\ \left(\frac{\lambda^{2}A-16B-8\lambda A}{4+8\lambda B}\right)+16B=0\\ \left(\frac{\lambda^{2}A-16A-8\lambda A}{4+8\lambda B}\right)+16B=$
$(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}A + 8dB = 56)$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}B - 16B - 8dA) + 16B = 0$ $(d^{2}A + 8dB = 56)$ $(d^{2}A + 8dB = 56)$ $(d^{2}A + 8dA = 0)$
$\frac{(A^{2}A + 8AB = 56)}{(A^{2}B + 8AA = 0)}$ $\Rightarrow Mere is no solution for A, B, A$ $\Rightarrow uess y = t (A cos 4t + B sin 4t)$
$\frac{\left(\lambda^{2}A + 8\lambda B = 56\right)}{\left(\lambda^{2}B - 8\lambda A = 0\right)}$ $\Rightarrow Mere is no solution for A, B, \lambda$ $= \frac{1}{2} \text{ Auess } \gamma = t \left(A \cos 4t + B \sin 4t\right)$
Shere is no solution for A, B, L  auess 7 = t (A cos 4t + B sin 4t)
Shere is no solution for A, B, L  auess 7 = t (A cos 4t + B sin 4t)
auess J= t (A cos 4t + B sin 4t)
P
O. Let 7 = t (Acos 4t + B sin 4t)
7'= (A cos 4t + B sin 4t) + t(-4A sin 4t
+4B COS 41)
0 - 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1
7 = (-4A sin 4t + 4B cos 4t) + (-4A sin 4t +4B cos 4t) + t (-16A cos 4t -
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(11R1/12 1/ N+) , , (1+ 1 (-4) - 4A - 16R+)
(4B+4B-16At) 6-54t + (-4A-4A-16Bt) Sin 4t+16(At 6054t + Bt sin 4t)=56 cos 4t
SM (CHOCK)
(8B-16At+16At) cos 4t + (-8A-16Bt+16Bt)
sin 4t = 56 cos 4t
8B cos 4t - 8A sin 4t = 56 cos 4t
58B=56
[-84=0] A=0, B=1
Op = 9t Sin 4t
=> Thus, transient solution=
7= Jh + Jp = A cos 4t + B sin 4t + Itsinut
The state of the s
Chooses
I R B R
Y. C.

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