



The screenshot shows the Microsoft Excel interface with a data table. The table is located on the "Sheet1" sheet and contains two columns: "teta" and "y". The data points are as follows:

teta	y
0	-0.75
3	0.848334
6	-0.92969
9	0.992437
12	-1.03532
15	1.057482
18	-1.05848
21	1.038289
24	-0.99732
27	0.936386
30	-0.85671
33	0.759891
36	-0.64786
39	0.522864
42	-0.3874
45	0.244186
48	-0.09608
51	-0.05394
54	0.202891
57	-0.34778
60	0.485702
63	-0.61391
66	0.729822
69	-0.83113
72	0.915805
75	-0.98215
78	1.028836
81	-0.5493
84	0.5493

Book1 - Excel

File Home Insert Page Layout Formulas Data Review View Test me what you want to do... Sign in Share

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 General Normal Bad Good Neutral Calculation Check Cell

A137 405

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
109	321	-0.23958																					
110	324	0.382999																					
111	327	-0.51875																					
112	330	0.644113																					
113	333	-0.75659																					
114	336	0.853917																					
115	339	-0.93416																					
116	342	0.995699																					
117	345	-1.03731																					
118	348	1.058164																					
119	351	-1.05784																					
120	354	1.036337																					
121	357	-0.99409																					
122	360	0.931955																					
123	363	-0.85116																					
124	366	0.753334																					
125	369	-0.64043																					
126	372	0.514704																					
127	375	-0.37868																					
128	378	0.235072																					
129	381	-0.08676																					
130	384	-0.06329																					
131	387	0.212066																					
132	390	-0.3566																					
133	393	0.494001																					
134	396	-0.62151																					
135	399	0.736583																					
136	402	-0.83691																					
137	405	0.92049																					
138																							

Chart1 Sheet1

Ready 9:18 PM 10/17/2017

IKHARROBA ELIZABETH AMANDA  
IS | ENG 03 / 016  
ENR 381

$$4 \frac{d^2y}{dt^2} + 4 \frac{dy}{dt} + 5y = 6 \sin t$$

$$\frac{d^2y}{dt^2} + 4 \frac{dy}{dt} + 5y = 0$$

$$m^2 + 4m + 5 = 0$$

$$-b \pm \sqrt{b^2 - 4ac}$$

$$\frac{-4 \pm \sqrt{4^2 - 4(5)(5)}}{2(1)}$$

$$\frac{-4 \pm \sqrt{16 - 100}}{2}$$

$$\frac{-4 \pm \sqrt{-84}}{2}$$

$$\frac{-4 \pm i\sqrt{84}}{2}$$

$$-2 \pm i\sqrt{21}$$

C.F.  
 $y = e^{-2t} (A \cos t + B \sin t)$   
P.I.  
 $y = c \cos t + b \sin t$   
 $\frac{dy}{dt} = -c \sin t + b \cos t$   
 $\frac{d^2y}{dt^2} = -c \cos t - b \sin t$

$$-c \cos t - b \sin t + 4(-b \sin t + c \cos t) + 5(c \cos t + b \sin t) = 6 \sin t$$

$$-c \cos t - b \sin t + 4c \cos t + 4b \cos t + 5c \cos t + 5b \sin t = 6 \sin t$$

$$-c \cos t + 4b \cos t + 5c \cos t - b \sin t - 4b \sin t + 5b \sin t = 6 \sin t$$

$$(5c - c + 4b + 5c) + (-b - 4b + 5b) = 6$$

comparing coefficients  
 $-c + 4b + 5c = 0$  (1)  
 $-b - 4b + 5b = 6$  (2)

4b + 4c = 0 (1)  
 $-4b + 4a = 6$  (2)

Add eqn ① and ②.

$$8C = -6$$

$$C = \frac{-6}{8}$$

$$C = -\frac{3}{4}$$

from eqn ①.

$$4D + 4C = 0$$

$$4D + 4\left(-\frac{3}{4}\right) = 0$$

$$4D + (-3) = 0$$

$$4D = 3$$

$$D = \frac{3}{4}$$

$$\text{P.I. } y = -\frac{3}{4} \cos \theta + \frac{3}{4} \sin \theta$$

$$y = \frac{3}{4} (-\cos \theta + \sin \theta)$$

$$\text{G.S.} = \text{C.F.} + \text{P.I.}$$

$$y = e^{-2\theta} (A \cos \theta + B \sin \theta) + \frac{3}{4} (-\cos \theta + \sin \theta)$$

(iv) Neglecting the C.F.

$$y = 0.75 (-\cos \theta + \sin \theta)$$

$$y = 0.75 (\cos \theta - \sin \theta)$$

From  $0^\circ$  to  $270^\circ$ .

iii Steady state value;

$$\frac{dy}{dt} = 0 \quad \theta = \infty$$

2

$$2: EI \frac{d^2y}{dx^2} = \frac{w(L-x)^2}{2}$$

$$EI m^2 = 0$$

$$m^2 = 0$$

$$m = \sqrt{0}$$

$$m = 0$$

$$\therefore y = e^{mx}(A+Bx)$$

$$y = e^{0x}(A+Bx)$$

$$y = A+Bx$$

P-I.

$$y = Ax^2 + Bx^3 + Cx^4$$

$$\frac{dy}{dx} = 2Ax + 3Bx^2 + 4Cx^3$$

$$\frac{d^2y}{dx^2} = 2A + 6Bx + 12Cx^2$$

$$E-I (2A + 6Bx + 12Cx^2) = \frac{w}{2}(L-x)^2$$

$$2AEI + 6Bx EI + 12Cx^2 EI = \frac{w}{2}(L^2 - 2Lx + x^2)$$

multiply through by 2.

$$4AEI + 12Bx EI + 24Cx^2 EI = w(L^2 - 2Lx + x^2)$$

comparing coefficient

$$24CEI = w$$

$$C = \frac{w}{24EI}$$

$$12BEI = -2wLx$$

$$B = \frac{-2wLx}{12EI} = \frac{-wL}{6EI}$$

$$4AEI = wL^2$$

$$A = \frac{wL^2}{4EI}$$

$$y = \left(\frac{wL^2}{4EI}\right)x^2 + \left(\frac{-wL}{6EI}\right)x^3 + \left(\frac{w}{24EI}\right)x^4$$

$$y = \frac{wL^2x^2}{4EI} - \frac{wLx^3}{6EI} + \frac{wx^4}{24EI}$$

$$y = \frac{6wL^2x^2 - 4wLx^3 + wx^4}{24EI}$$

$$y = \frac{w}{24EI} (6L^2x^2 - 4Lx^3 + x^4)$$

G.S.

$$y = A + Bx + \frac{w}{24EI} (6L^2x^2 - 4Lx^3 + x^4)$$

$$\text{at } y=0, x=0, \frac{dy}{dx} = 0$$

$$\therefore 0 = A + B(0) + \frac{w}{24EI} (6L^2(0)^2 - 4L(0)^3 + (0)^4)$$

$$\therefore A = 0$$

$$\frac{dy}{dx} = B + \frac{w}{24EI} (12L^2(0) - 12L(0)^2 + 4(0)^3)$$

$$B = 0$$

Particular Solution

$$y = \frac{w}{24EI} (6L^2x^2 - 4Lx^3 + x^4)$$

$$y = \frac{w}{24EI} x^2 (6L^2 - 4Lx + x^2)$$

$$y = \frac{wL^2}{24EI} (6L^2 - 4L^2 + L^2)$$

$$y = \frac{wL^2}{24EI} (3L^2)$$

$$y = \frac{3wL^4}{8 \times 24EI}$$

$$y = \frac{wL^4}{8EI}$$

