Lab+4+Data
+Sheet_bl...

Lab No. 4 Data Sheet
Experiment 1

Name: Will Buziak   Partners: Toni Perkins

Partners: Brenn Ellis   Partners: _____

y_{bias} = 1.748

		LOG DECREMENT			
Peak No.	Time (s)	Δt (s)	y_i (V)	δ	ζ
1	.0233	N/A	3.687	N/A	N/A
2	.1317	.1084	3.477	.0255	.007
3	.2563	.1246	3.237	.081	.0087
4	.3761	.1196	2.969	.0375	.0106
5	.4894	.1133	2.798	.0258	.0073
6	.6159	.1265	2.427	.062	.017
7	.7278	.1119	2.376	.0089	.0015
8	.8408	.113	2.207	.032	.009

$$\delta_{i+1} = \ln\left(\frac{y_i}{y_{i+1}}\right)$$

$$\zeta_{i+1} = \frac{\delta_{i+1}}{\sqrt{\delta_{i+1}^2 + 4\pi^2}}$$

$T_d = \overline{\Delta t}$ = .116

$\omega_d = 2\pi / T_d$ = 53.81

$\overline{\zeta}$ = .0818

$\omega_n = \omega_d / \sqrt{1-\overline{\zeta}^2}$ = 53.841

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Lab No. 4 Data Sheet
Experiment 2

peak-peak amplitude (use data cursor on the DFT figure)

Input: sine wave, A_{input} = 5V

f_i (Hz)	f_{meas} (Hz)	A_{out} (V)	$M_{meas}=A_{i,\,out}/A_{3Hz,\,out}$	M_{theory}	ε
3	3	.4973	1	15.73	1
4	4	.5586	1.1232		-92.86
5	5	.6353	1.277		-91.88
6	6	.8095	1.6278		-89.67
7	7	1.228	2.469		-84.309
8	8	3.257	6.549		-56.4
9	9	3.393	6.823		-56.6
10	10	1.09	2.191		-86.07
12	12	.4043	.813		-94.60
15	15	.1794	.3607		-97.704
20	20	.07009	.1409		-99.104
30	30	.02114	.0425		-99.73

$$\varepsilon = \frac{M_{meas} - M_{theory}}{M_{theory}} \times 100\%$$

Lab Instructor's Signature: *Md Vafi 3.0.23*

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