

Lampiran 1 perhitungan pengujian impak

Pengujian impak

Variasi 4.,3

Diketahui :

Tebal spesimen (d)	: 5 mm
Lebar spesimen (b)	: 13 mm
Luas (Ao)	: 65 mm ²
Sudut α	: 30 ⁰
Sudut β	: 29 ⁰
Panjang Lengan (R)	: 0,65 m
Percepatan gravitasi (g)	: 9.81 m/s ²
Berat Pendulum (m)	: 14 kg

$$a. E_{srp} = m \cdot g \cdot R \cdot (\cos \beta - \cos \alpha)$$

$$= 14 \text{ kg} \cdot 9.81 \text{ m/s}^2 \cdot 0,65 \text{ m} (\cos 29 - \cos 30)$$

$$= 89,27 \text{ kgm /s}^2 \cdot (0,874 - 0,866)$$

$$= 0,71 \text{ kgm /s}^2 = 0,71 \text{ J}$$

$$b. HI = \frac{E_{serap}}{A_o}$$

$$= \frac{0,71}{65 \text{ mm}^2}$$

$$= 0,01 \text{ J/mm}^2$$

Lampiran 2 perhitungan pengujian tarik

Variasi 1.1

Diketahui:

$$\Delta F : 50 \times 18.85 = 9425,5 \text{ mm}$$

$$\Delta L : 3 \times 0.1 = 0.3 \text{ mm}$$

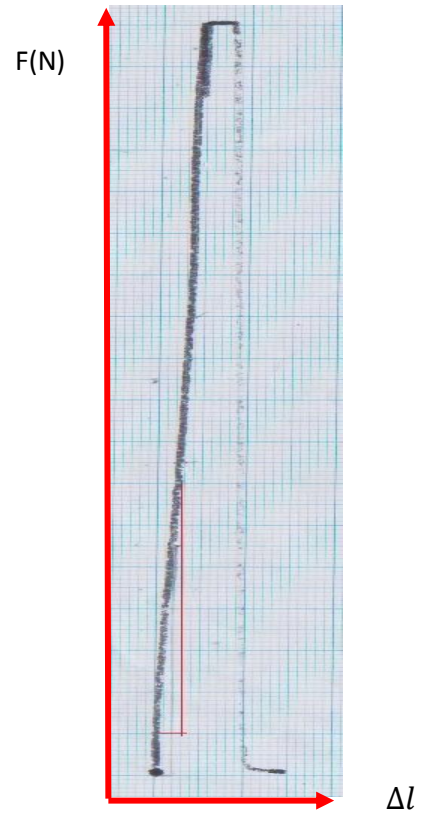
$$F : 3447.23 \text{ N}$$

$$A : 13 \text{ mm} \times 5 \text{ mm} = 65 \text{ mm}$$

$$E : \frac{57 \times 942,5}{0.3 \times 65} = 2025,69 \text{ MPa}$$

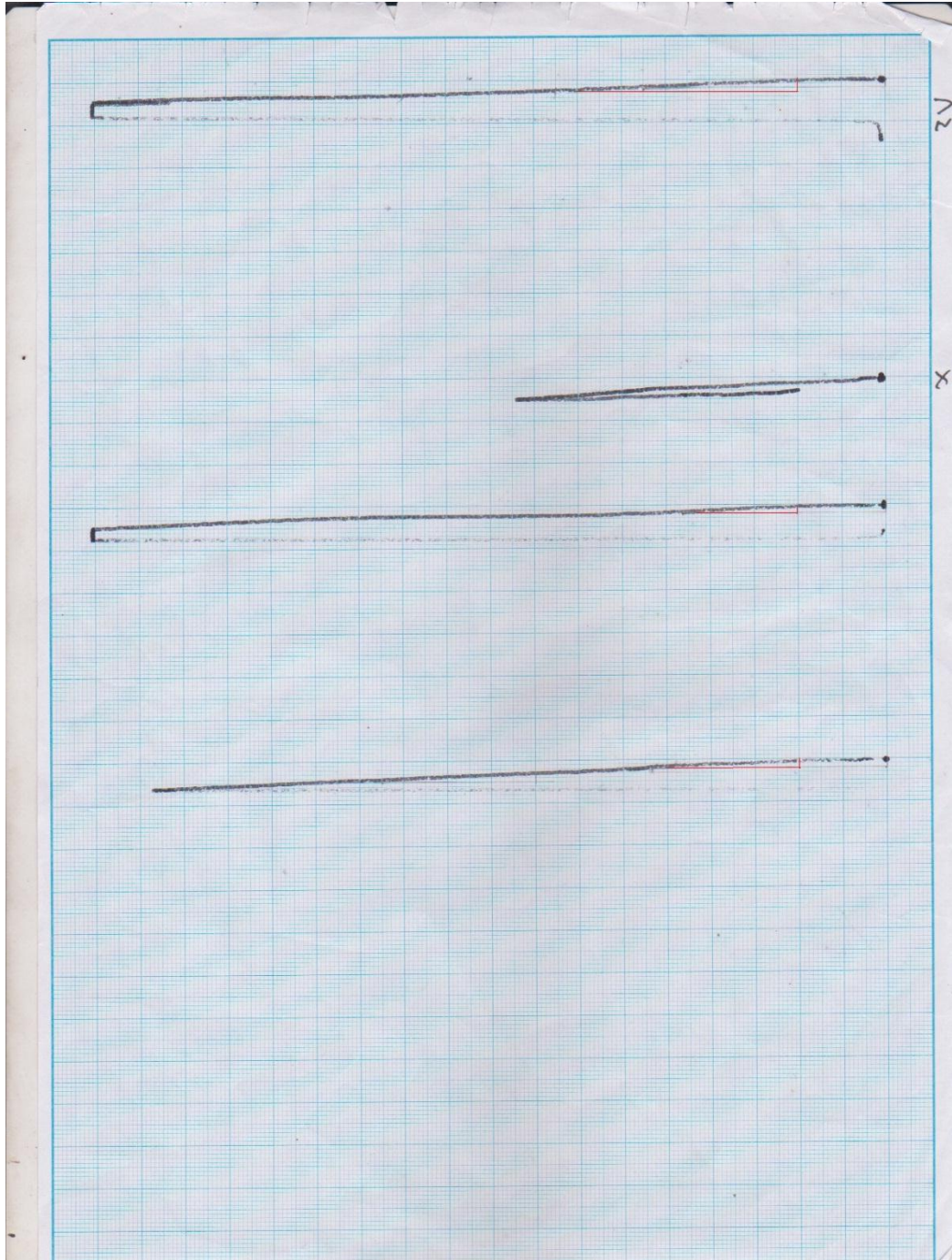
$$\sigma : \frac{3447.23}{65} = 52.97 \text{ MPa}$$

$$\varepsilon : \frac{0.8}{57} = 0.014 \text{ mm/mm}$$



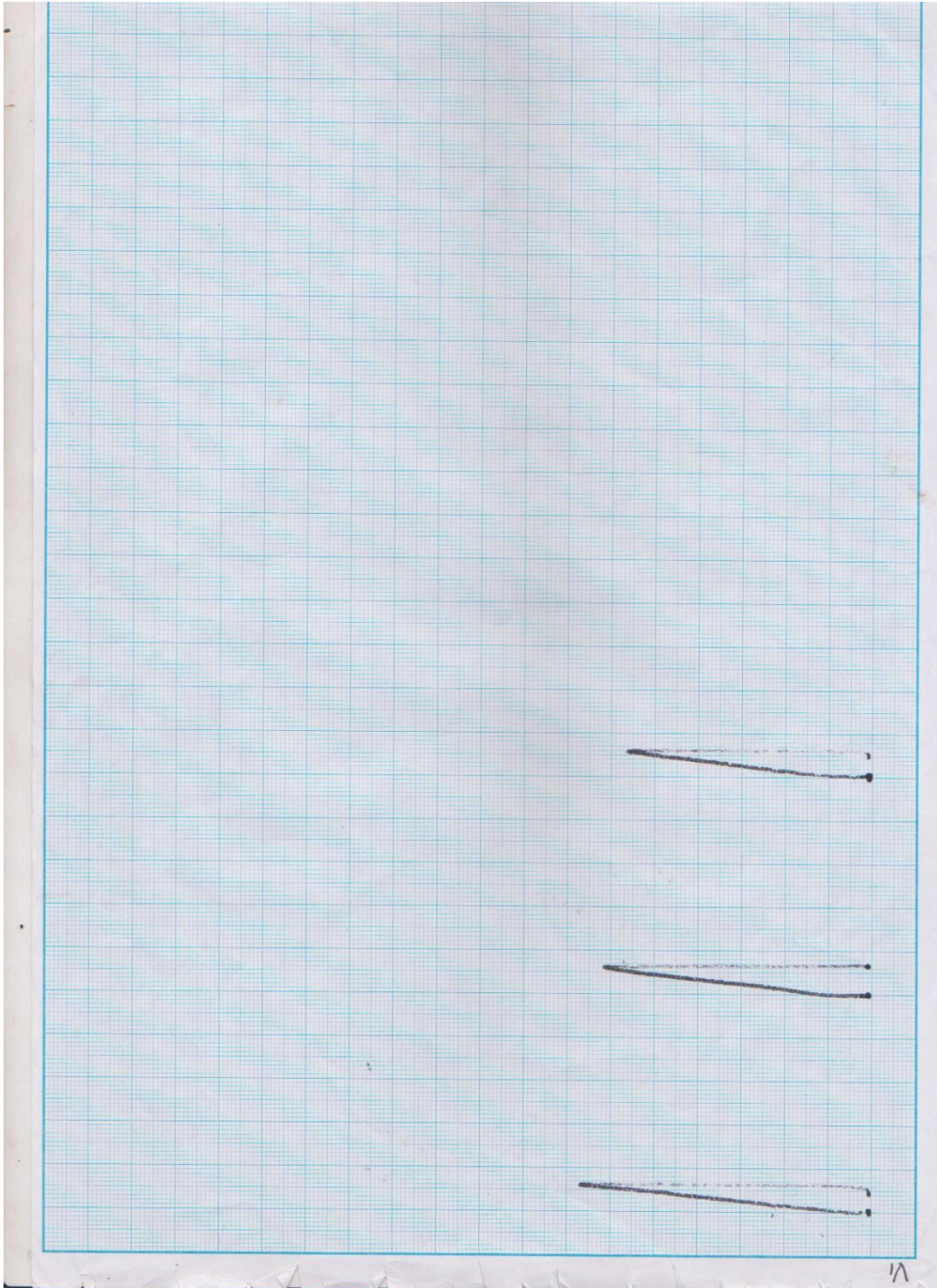
Lampiran 3

Grafik tarik 1



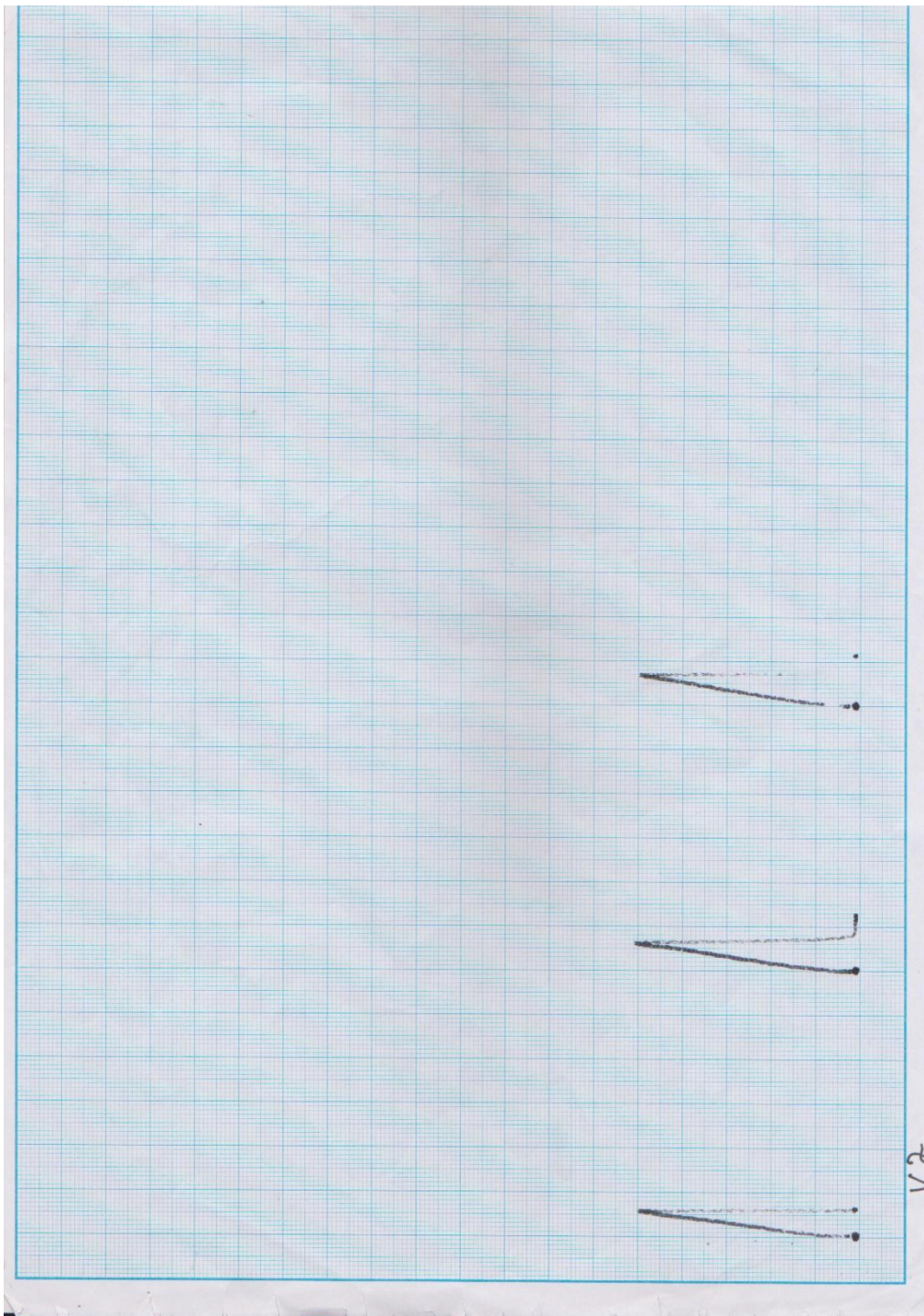
Lampiran 4

Grafik tarik variasi 2



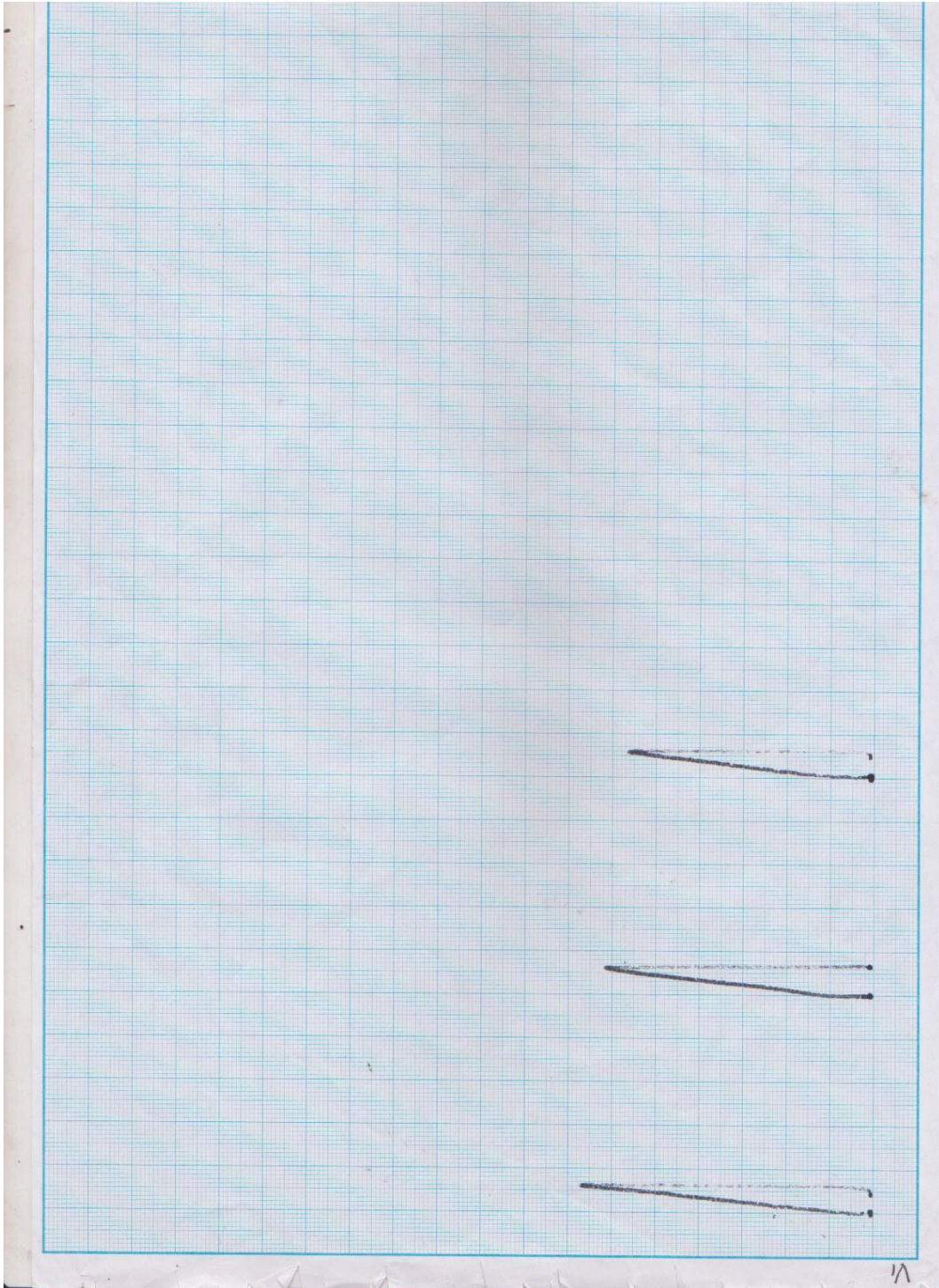
Lampiran 5

Grafik tarik variasi 3



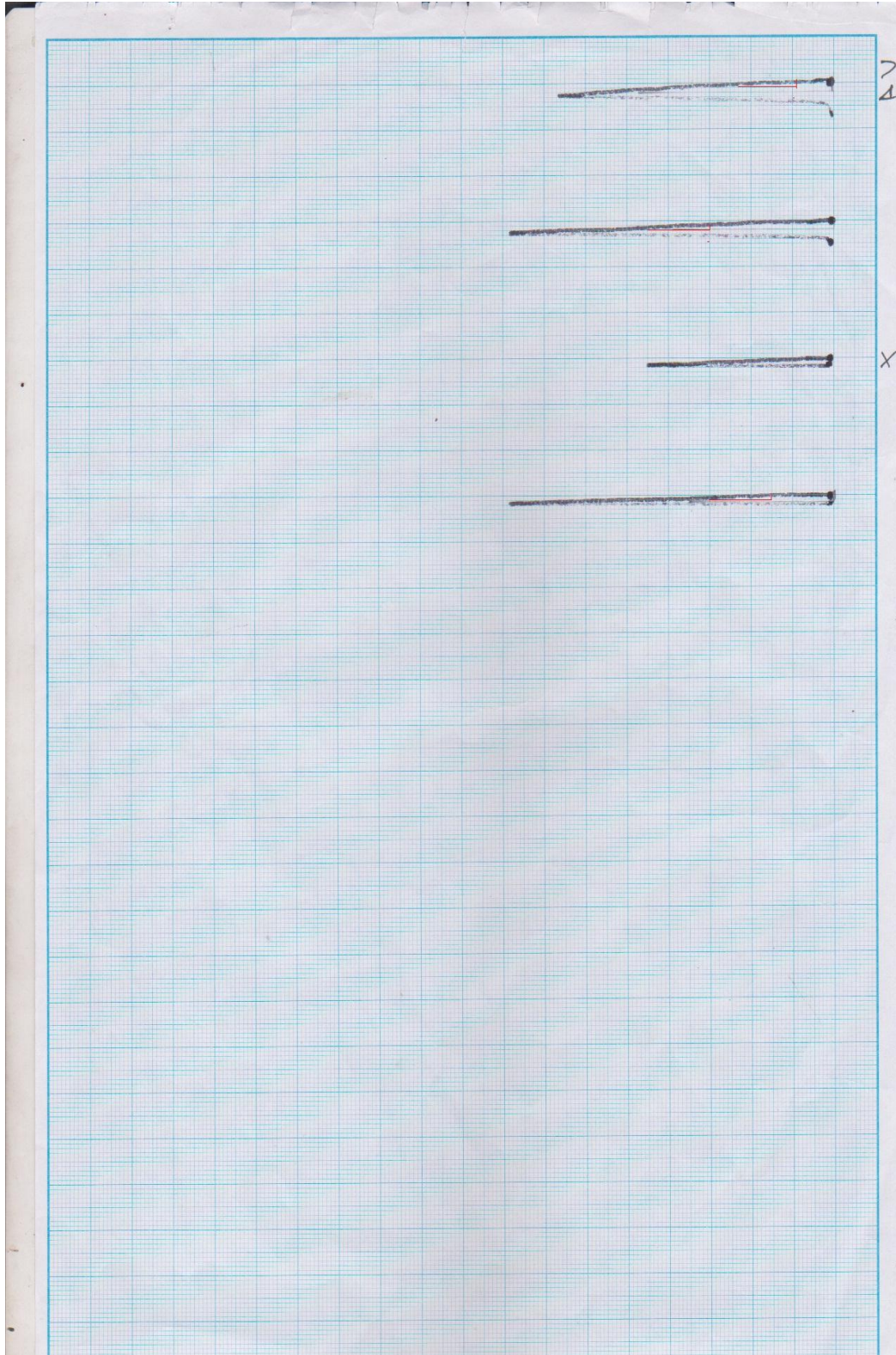
Lampiran 6

Grafik tarik variasi 4



Lampiran 7

Grafik tarik variasi 5



Lampiran 8

Hasil pengujian tarik pandan berduri

Variasi	Spesimen	Tebal	Lebar	Fmax	Lo	ΔL_{max}	A	ΔF	Kekuatan,pers(2.1)	Regangan,pers(2.2)	Modulus elastisitas,pers(2.3)
		(mm)	(mm)	(N)	(mm)	(mm)	(mm)	(N)	(σ ,MPa)	(ϵ ,mm/mm)	(E,Mpa)
1	1	5.3	13.3	3447.23	57	1.5	70.49	842.50	48.90	0.0263	454.18
	2	5.4	13.2	3518.99	57	0.9	71.28	462.00	49.37	0.0158	410.49
	3	5.4	13.5	2572.18	57	0.8	72.90	441.14	35.28	0.0140	431.16
	Mean								44.52	0.02	431.94
	Stdev								8.00	0.01	21.85
2	1	5.5	13.4	3345.21	57	1.0	73.70	334.44	45.39	0.0175	258.66
	2	5.5	13.5	1646.11	57	0.6	74.25	153.80	22.17	0.0105	196.78
	3	5.5	13.3	1573.52	57	0.7	73.15	309.92	21.51	0.0123	344.99
	Mean								29.69	0.01	266.81
	Stdev								13.60	0.00	74.44
3	1	5.3	13.5	1439.12	57	0.5	71.55	154.70	20.11	0.0088	246.48
	2	5.3	13.3	1421.46	57	0.5	70.49	230.40	20.17	0.0088	372.61
	3	5.4	12.8	1843.57	57	0.7	69.12	308.40	26.67	0.0123	363.32
	Mean								22.32	0.01	327.47
	Stdev								3.77	0.00	70.29
4	1	5.5	13.4	3345.21	57	1.0	73.70	334.44	45.39	0.0175	258.66
	2	5.5	13.5	1646.11	57	0.6	74.25	153.80	22.17	0.0105	196.78
	3	5.5	13.3	1573.52	57	0.7	73.15	309.92	21.51	0.0123	344.99
	Mean								29.69	0.01	266.81
	Stdev								13.60	0.00	74.44
5	1	5.4	13.5	1317.48	57	0.7	72.90	306.20	18.07	0.0123	342.02
	2	5.3	13.2	1100.68	57	0.5	69.96	351.44	15.73	0.0088	572.67
	3	5.3	13.4	1573.52	57	0.4	71.02	207.02	22.16	0.0070	415.38
	Mean								18.65	0.01	443.36
	Stdev								3.25	0.00	117.84

Lampiran 9

Pengujian dampak dengan serat pandan laut

No.	Variasi	Spesimen	Lebar	Tebal	Luas	Sudut α	Sudut β	Ketangguhan (HI)	Energi terserap (Esrp)
			mm	mm	mm ²	(°)	(°)	J/mm ²	J
1	1	1	13,6	5,1	69,36	30	28	0,02	1,51
2		2	13,3	5,1	67,83	30	28	0,02	1,51
3		3	13,5	5,2	70,2	30	27,5	0,03	1,87
4	2	1	13,4	5,3	71,02	30	29	0,01	0,77
5		2	13,4	5,2	69,68	30	28,5	0,02	1,14
6		3	13,2	5,2	68,64	30	28,5	0,02	1,14
7	3	1	13,5	5,2	70,2	30	29	0,01	0,77
9		2	13,4	5,3	71,02	30	29	0,01	0,77
10		3	13,1	5,3	69,43	30	29	0,01	0,77
11	4	1	12,9	5,2	67,08	30	29	0,01	0,77
12		2	13,1	5,1	66,81	30	28,5	0,02	1,14
13		3	13,3	5,2	69,16	30	29	0,01	0,77
14	5	1	13,1	5,1	66,81	30	28	0,02	1,51
15		2	13,3	5,2	69,16	30	29	0,01	0,77
16		3	13,1	5,2	68,12	30	28,5	0,02	1,14