

$m_i$ (g)	$\alpha_{pulley1}$	$a_{pulley1}$
15.3	0.18	0.4284
20.3	0.26	0.6188
25.3	0.32	0.7616
30.3	0.41	0.9758
35.3	0.44	1.0472

$m_i$ (g)	$\alpha_{pulley2}$	$a_{pulley2}$
15.3	0.18	0.4284
20.3	0.25	0.595
25.3	0.34	0.8092
30.3	0.36	0.8568
35.3	0.44	1.0472

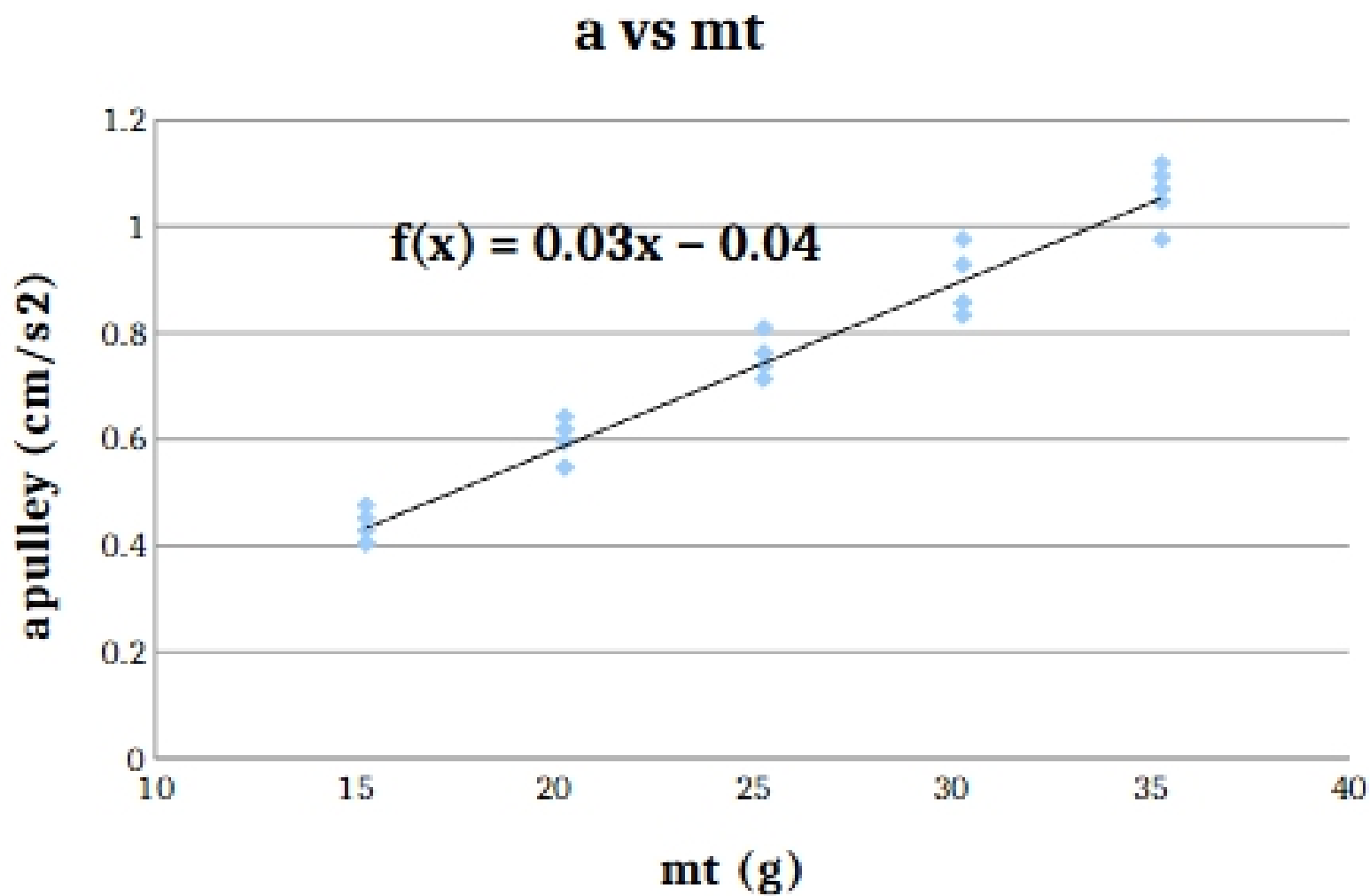
$m_i$ (g)	$\alpha_{pulley3}$	$a_{pulley3}$
15.3	0.17	0.4046
20.3	0.25	0.595
25.3	0.32	0.7616
30.3	0.39	0.9282
35.3	0.46	1.0948

$m_i$ (g)	$\alpha_{pulley4}$	$a_{pulley4}$
15.3	0.19	0.4522
20.3	0.26	0.6188
25.3	0.31	0.7378
30.3	0.35	0.833
35.3	0.47	1.1186

$m_i$ (g)	$\alpha_{pulley5}$	$a_{pulley5}$
15.3	0.20	0.476
20.3	0.27	0.6426
25.3	0.32	0.7616
30.3	0.36	0.8568
35.3	0.45	1.071

$m_i$ (g)	$\alpha_{pulley6}$	$a_{pulley6}$
15.3	0.17	0.4046
20.3	0.23	0.5474
25.3	0.30	0.714
30.3	0.36	0.8568
35.3	0.45	1.071

$m_t$ (g)	$\alpha_{\text{pulley7}}$	$a_{\text{pulley7}}$
15.3	0.17	0.4046
20.3	0.23	0.5474
25.3	0.30	0.714
30.3	0.36	0.8568
35.3	0.41	0.9758



Using the LINEST method in EXCEL, I calculated the following data:

Slope $s$ ( $\text{cm}/\text{g}\cdot\text{s}^2$ )	0.031008	-0.0412624	Intercept $b$ ( $\text{cm}/\text{s}^2$ )
$\sigma_s$	0.000937764	0.024634643	$\sigma_b$

$$s = \frac{gr^2}{I}$$

$$I = \frac{gr^2}{s}$$

$$I = \frac{(980)(1.5)(1.5)}{0.031008}$$

$$I = 71110.68111 \text{ g} \cdot \text{cm}^2$$

$$I = 7.11\text{E-}3 \text{ kg} \cdot \text{m}^2$$