data

M1 (g)	M2 (g)	t (s)	d (m)
50	51	11.17	1
100	200	1.96	1
300	500	2.31	1
1000	2000	2	1

graph

m diff	accel
0.010	0.097
0.333	3.267
0.250	2.450
0.333	3.267

accel

$y = -1.818E{-}14x^2 + 9.8x + 8.882E{-}16$

$R^2 = 1$