

ETIM PATRICK

161ENIG041018

Elec 1/Elec

t (hr)	d (m)	Y (ind)	X = t	XY	X ²	Y ²
0	2	0.693142	0	0	0	0.499089
1	5	1.609417	1	1.609437	1	2.669721
2	19	2.944438	2	5.8889	4	15.30392
3	50	3.912023	3	11.7360	9	25.1731
4	151	5.017279	4	20.069	16	37.83613
5	470	6.152732	5	30.764	25	52.8372
6	1435	7.268920	6	43.6135	36	70.80376
7	4512	8.414495	7	58.9015	49	89.6366
8	12936	9.467769	8	75.742	64	112.872
9	41125	10.62437	9	95.6193	81	112.872
10	111021	11.61747	10	116.177	100	135.6034

$$d = a e^{b t}$$

$$\ln d = \ln a + \ln b^t$$

$$\ln d = \ln a + t \ln b$$

$$y = a_0 + a_1 x$$

$$a_0 = \ln a, a_1 = \ln b, y = \ln d, x = t$$

$$\sum y^2 = 551.2338$$

$$\sum y = 67.7221$$

$$\sum x^2 = 385$$

$$\sum x = 55$$

$$\sum xy = 460.118$$

$$67.7221 = 11a_0 + 55a_1$$

$$460.118 = 55a_0 + 385a_1$$

Solving Simultaneous

$$a_0 = 0.6334$$

$$a_1 = 0.1046$$

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}}$$

$$R = \frac{11 \times 460 - 118 \times 55}{\sqrt{(11 \times 385 - 118^2)(11 \times 551 - 274^2)}}$$

$$R = 0.9984$$

$$R^2 = (0.9984)^2 = 0.9968$$

In Conclusion the R^2 is