MALIK ABDULRAHEEM
16/ENG04/029
ELECT ENG

ENG 282 ASSIGNMENT

$dy/dt = Ky$

$\int dy/y = \int K dt$

$\ln y = Kt + c$

$y = e^{Kt+c}$

$y = e^{Kt} \cdot e^{c}$

$y = y_0 e^{Kt}$ $(e^{c} = y_0)$

$y = y_0 e^{Kt}$

$y = 2y_0$

when $t = 5$,

$2y_0 = y_0 e^{5K}$

$2 = e^{5K}$

$5K = \ln 2$

$K = \ln 2/5 = 0.1386$

$y = 20e^{0.1386t}$

for 1½ days (36 hours)

$y = 20e^{0.1386 \times 36}$

$y = 2937.55$ bacteria

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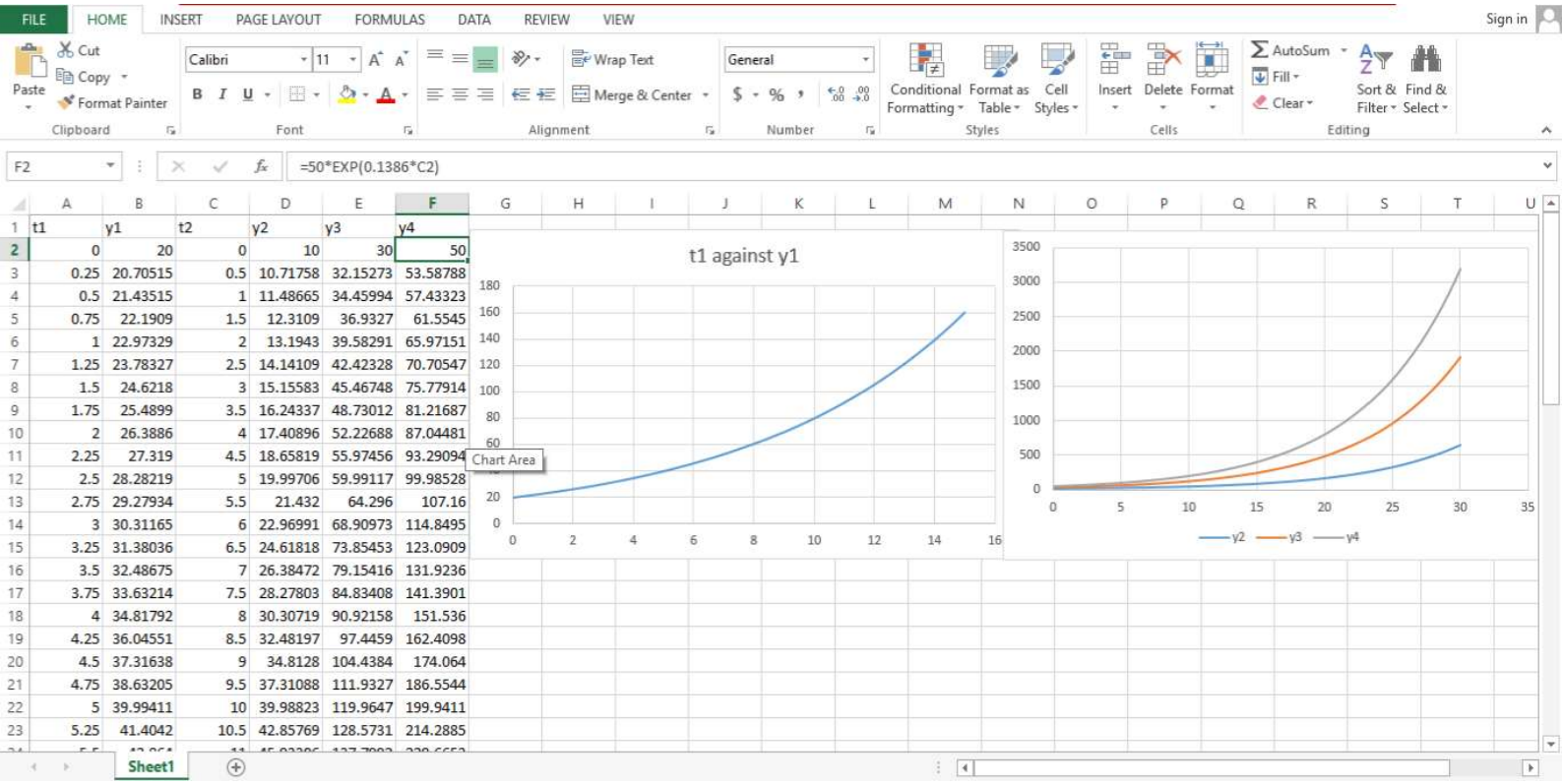

t1	y1	t2	y2	y3	y4
0	20	0	10	30	50
0.25	20.70515	0.5	10.71758	32.15273	53.58788
0.5	21.43515	1	11.48665	34.45994	57.43323
0.75	22.1909	1.5	12.3109	36.9327	61.5545
1	22.97329	2	13.1943	39.58291	65.97151
1.25	23.78327	2.5	14.14109	42.42328	70.70547
1.5	24.6218	3	15.15583	45.46748	75.77914
1.75	25.4899	3.5	16.24337	48.73012	81.21687
2	26.3886	4	17.40896	52.22688	87.04481
2.25	27.319	4.5	18.65819	55.97456	93.29094
2.5	28.28219	5	19.99706	59.99117	99.98528
2.75	29.27934	5.5	21.432	64.296	107.16
3	30.31165	6	22.96991	68.90973	114.8495
3.25	31.38036	6.5	24.61818	73.85453	123.0909
3.5	32.48675	7	26.38472	79.15416	131.9236
3.75	33.63214	7.5	28.27803	84.83408	141.3901
4	34.81792	8	30.30719	90.92158	151.536
4.25	36.04551	8.5	32.48197	97.4459	162.4098
4.5	37.31638	9	34.8128	104.4384	174.064
4.75	38.63205	9.5	37.31088	111.9327	186.5544
5	39.99411	10	39.98823	119.9647	199.9411
5.25	41.4042	10.5	42.85769	128.5731	214.2885

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