

Gompertz Curve

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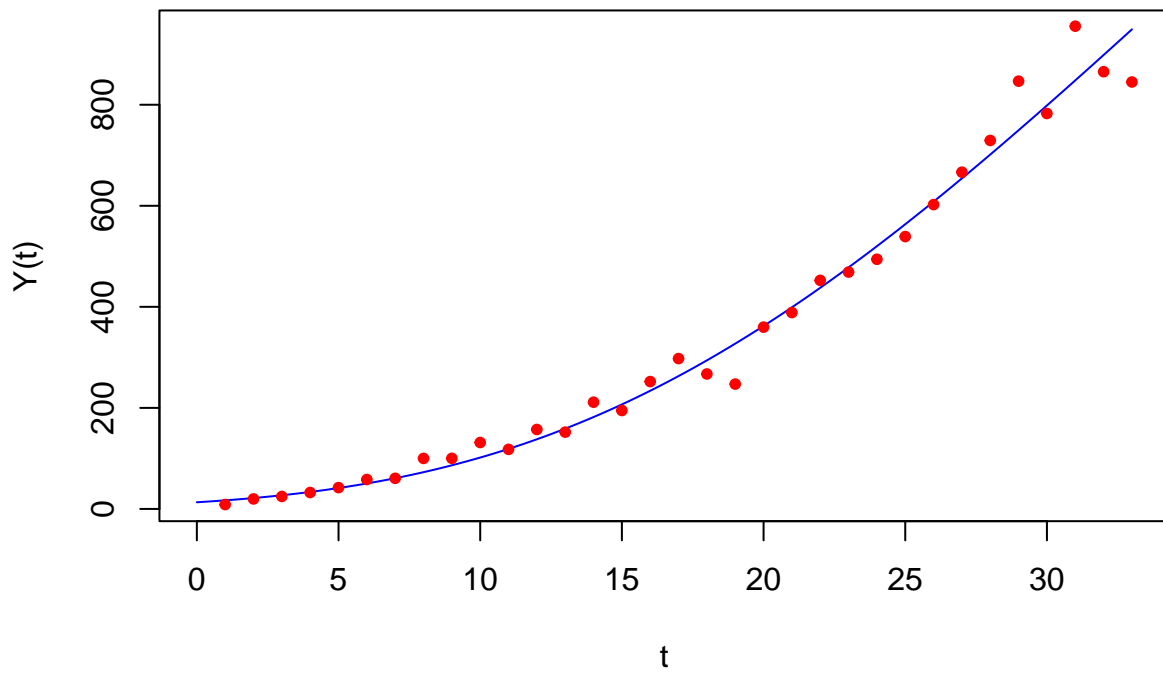
Class: M.Sc. Statistics Sem 1

With log base 10

Year	Consumption	t	log10Y
1920	8.7	1	0.9395193
1921	19.8	2	1.2966652
1922	24.7	3	1.3926970
1923	32.5	4	1.5118834
1924	42.2	5	1.6253125
1925	58.2	6	1.7649230
1926	60.6	7	1.7824726
1927	100.0	8	2.0000000
1928	100.1	9	2.0004341
1929	131.5	10	2.1189258
1930	117.9	11	2.0715138
1931	157.3	12	2.1967287
1932	152.0	13	2.1818436
1933	211.3	14	2.3248995
1934	194.8	15	2.2895890
1935	252.1	16	2.4015728
1936	297.6	17	2.4736329
1937	267.1	18	2.4266739
1938	247.1	19	2.3928727
1939	359.8	20	2.5560612
1940	388.7	21	2.5896145
1941	452.4	22	2.6555226
1942	468.8	23	2.6709876
1943	494.2	24	2.6939027
1944	539.1	25	2.7316693
1945	602.4	26	2.7798850
1946	666.5	27	2.8238002
1947	729.3	28	2.8629062
1948	846.7	29	2.9277296
1949	782.7	30	2.8935953
1950	955.5	31	2.9802307
1951	865.4	32	2.9372169
1952	845.0	33	2.9268567

```
## [1] 18.50435
## [1] 26.48901
## [1] 31.22878
## [1] -2.347442
## [1] 3.468371
## [1] 2940.163
## [1] 0.9536942
## [1] 0.004493221
```

```
## [1] 118.8252
## [1] 399.0587
## [1] 1356.276
```



```
S1 = 18.5043465
S2 = 26.4890115
S3 = 31.2287802
a = 0.0044932
b = 0.9536942
k = 2940.163
```

Reqd Gompertz Curve is

$$Y_t = ka^{b^t}$$

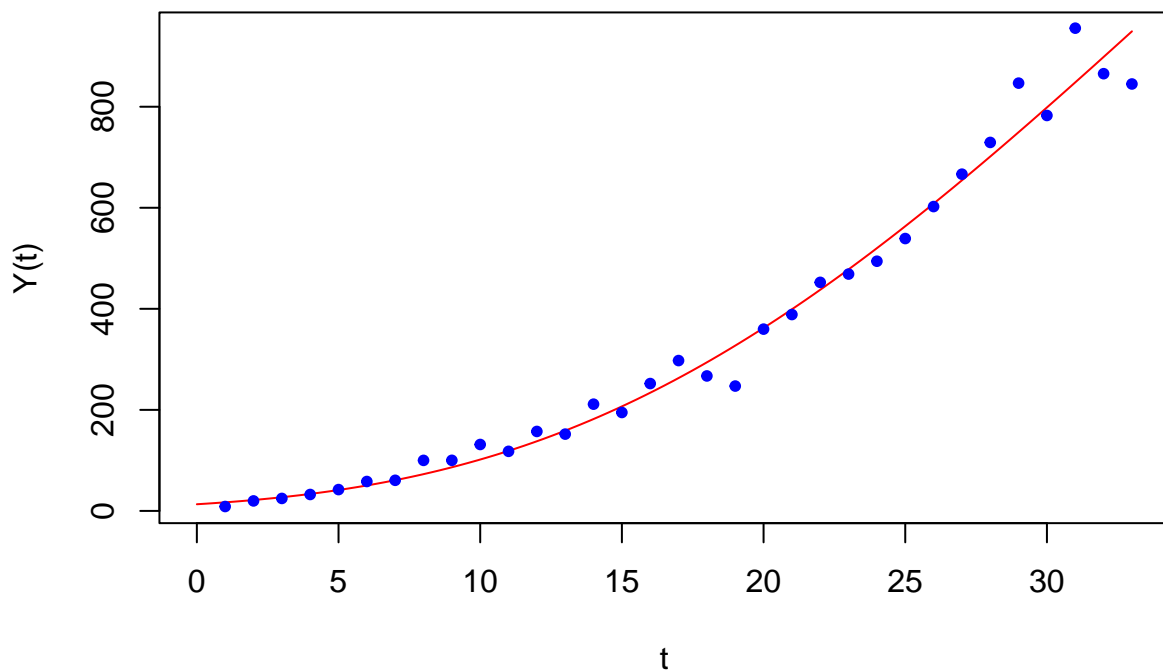
Trend Values:

Year	Trend Value
1930	118.825224
1940	399.058693
1960	1356.2762584

With log base e

Year	Consumption	t	lnY
1920	8.7	1	2.163323
1921	19.8	2	2.985682
1922	24.7	3	3.206803
1923	32.5	4	3.481240
1924	42.2	5	3.742420
1925	58.2	6	4.063885
1926	60.6	7	4.104295
1927	100.0	8	4.605170
1928	100.1	9	4.606170
1929	131.5	10	4.879007
1930	117.9	11	4.769837
1931	157.3	12	5.058155
1932	152.0	13	5.023881
1933	211.3	14	5.353279
1934	194.8	15	5.271973
1935	252.1	16	5.529826
1936	297.6	17	5.695750
1937	267.1	18	5.587623
1938	247.1	19	5.509793
1939	359.8	20	5.885548
1940	388.7	21	5.962808
1941	452.4	22	6.114567
1942	468.8	23	6.150176
1943	494.2	24	6.202940
1944	539.1	25	6.289901
1945	602.4	26	6.400922
1946	666.5	27	6.502040
1947	729.3	28	6.592085
1948	846.7	29	6.741346
1949	782.7	30	6.662749
1950	955.5	31	6.862235
1951	865.4	32	6.763192
1952	845.0	33	6.739337

[1] 42.60783
 ## [1] 60.9932
 ## [1] 71.90692
 ## [1] -5.405186
 ## [1] 7.98622
 ## [1] 2940.163
 ## [1] 0.004493221
 ## [1] 0.9536942
 ## [1] 118.8252
 ## [1] 399.0587
 ## [1] 1356.276



$$S_1 = 42.6078323$$

$$S_2 = 60.9932029$$

$$S_3 = 71.9069237$$

$$a = 0.0044932$$

$$b = 0.9536942$$

$$k = 2940.163$$

Reqd Gompertz Curve is

$$Y_t = ka^{b^t}$$

Trend Values:

Year	Trend Value
1930	118.825224
1940	399.058693
1960	1356.2762584