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# Power Regression as an Example of the Third Law of Hotels in Paris: Planets

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## Abstract

**All of the linear term regression model:** Four ways too functional equation from the normal equations; obtaining normal equations from the functional equation by differentiation; variance analysis; extrapolation in Appell regression; improve the accuracy formula the isochronism; the number of Eulerian model; the statistical reliability, F-statistics; interpolation probabilities. All about power regression: four ways to display a functional equation of the normal equations; obtain the normal equations from the functional equation by differentiating; analysis of variance; extrapolation of the power of the regression flexicurity the accuracy with Juventus of the formula to My Short List's third law Euler number: statistical reliability: F-statistics; interpolation of probabilities, MATLAB, the standard normal probability calculators.

**Keywords:** The formula; The isochronism; Functional equation; Normal equations; Differentiation; Variance analysis; Extrapolation; The number of Eulerian model; The statistical reliability; F-statistics; Interpolation probabilities; Formula of hotels in Paris third law; Functional equation; Normal equation; Differentiation; Analysis of variance; Extrapolation; Euler number; Statistical reliability; F-statistics; Interpolation of probabilities; MATLAB; Standard normal probability calculators

## Introduction

### Use the regression in the physics celestial bodies

Sustainable related to statistics as to the stress hormones subject can overcome this article. In the minds of most statistics is fundamentally one of the parties-counting manufactured products, physical products, etc. But when such calculations may lead to the opening of world significance, statistics captures the spirit of the! (Figures 1 and 2).

The author as a child lived in a garrison. The toys were on paper, paper plants strategic missiles and thin, like mannequins, anti-aircraft missiles... But childhood continues. So "Astrology and John (Figure 1) was opened by the third act the motions of the planets, for which the current could get Nobel Peace prize , we can now for half an hour repeat his path, historically, as it was.

**Source:** Johannes Kepler [4].
**Figure 1:** John Kepler (1571-1630gg) German mathematician, astronomer, mechanics, opticsand astrologer, the discoverer of the laws of motionof the planetsof the solar system.

The author of the article "the laws isochronism" Mr. Chris Impey [1] noted: "The laws isochronism apply to any orbital movement, whether the planet around the Sun, the moon around the Earth, or stars around the center of the galaxy.

The second and third laws were not the result of isochronism attempts to find patterns in orbits planets. The second and third laws isochronism studying mathematical relationship between the distance the planet from the Sun and the speed it is moving around the sun. Both of these are consequences of the application of the law of gravity and Newton's law of conservation since the pulse object, moving on an elliptic trajectory, but "Astrology surprisingly was able to get them without any of these notions!"

But the essence of and those quantitative steps in any items after math processing may result in an important opening and for you. No same any items? This is Sachs [2] produced calculations in health-biological laboratory; you can take it in any other laboratory.

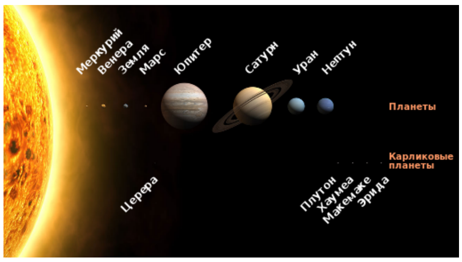


**Figure 2:** The planets in the solar system.

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## Methodology

Dr. Mathews and Dr. Fink presented [3] resulted in an excellent example of the use of a regression line: "Applications of numerical techniques in science and engineering involve curve fitting of experimental data. For example, in 1601, the German astronomer Johannes Kepler formulated the third law of planetary motion [4], $T = Cx^{3/2}$, where x is the distance to the Sun, measured in millions of kilometers, T is the orbital period measured in days, and C is a constant. The observed data pairs (x, T) for the first four planets, Mercury, Venus, Earth and Mars, are (58; 88), (108; 225), (150; 365), (228; 687), and the coefficient C obtained from the method of least squares[1] is C = 0.199769. The curve $T = 0{,}199769x^{3/2}$ and the data points are shown in Figure 3".

The authors present a power adjustment: "Let us suppose that $\{(x_k, y_k)\}_{k=1}^{N}$ – $N$ Points with various abscissas.

$$E(A) = \sum_{k=1}^{N} (Ax^{M} - y)^2.$$

Since we have only one variable as well – taking private derivatives is not required.

$$E(A) = \sum_{k=1}^{N} u^2, \textit{ if } u = Ax^M - y. \textit{ Here } \frac{du}{dA} = \sum_{k=1}^{N} 1 \times A^{1-1} \times x^M - 0 = \sum_{k=1}^{N} x^M; \frac{dE(A)}{du} = \sum_{k=1}^{N} 2u^1.$$

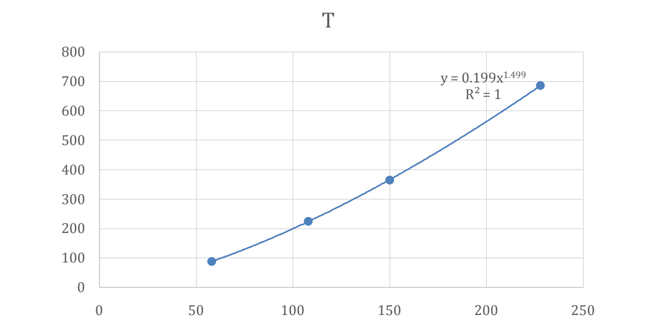
$$\text{Re}\textit{spectively}: \frac{dE(A)}{dA} = \frac{dE(A)}{du} \times \frac{du}{dA} = \sum_{k=1}^{N} 2u^1 \times \sum_{k=1}^{N} x^M = \sum_{k=1}^{N} 2(Ax^M - y)^1 \times (x^M) =$$

$$= 2\sum_{k=1}^{N} (Ax^{M+M} - yx^M) = 2(Ax^{2M} - yx^M);\ E'(A) = 0;\ 0 = \sum_{k=1}^{N} (Ax^{2M} - yx^M) = A\sum_{k=1}^{N} x^{2M} - \sum_{k=1}^{N} yx^M;$$

$$A\sum_{k=1}^{N} x^{2M} = \sum_{k=1}^{N} yx^M;$$

Hence the factor a curve, built least-squares (Table 1), $y = Ax^M$, Equal to

$$A = \frac{\sum_{k=1}^{N} x_k^M y_k}{\sum_{k=1}^{N} x_k^{2M}}; \qquad (1)$$




**Source:** John [3].

**Figure 3:** The least squares fit $T = 0{,}199769x^{3/2}$ for the first four planets, using Mr. Kepler's third law of planetary motion.

[1] L. Zachs (2, c. 71-72) writes: "To estimation parameters for selected according to numerous methods have been developed. Particular importance is *maximum-likelihood method* (R. As well. Fischer); it is a universal method maximum estimation is unknown parameters, applicable in cases, when the view distribution function is known; estimate the unknown parameters in this case are equal values, in which the sample has a maximum likelihood of a, i.e., as a assessments matching values that maximized the function maximum likelihood for the parameters, with the assumption that these options exist. This method of building point parameter estimates is in close connection with the method least squares".

| x | y | x^3/2 | (x^(3/2))*y | x^(2*(3/2)) |
|---|---|---|---|---|
| 58 | 88 | 441,7148 | 38870,906 | 195112 |
| 108 | 225 | 1122,369 | 252533,01 | 1259712 |
| 150 | 365 | 1837,117 | 670547,82 | 3375000 |
| 228 | 687 | 3442,725 | 2365151,7 | 11852352 |

**Table 1:** The original data for the coefficient as well.

| Functional equations | Normal equations |
|---|---|
| $y = a + b \times x$ | $a \times n + b\sum x = \sum y$ <br> $a\sum x + b\sum x^2 = \sum (x \times y)$ |
| $\lg_{10} y = a + b \times x$ | $a \times n + b\sum x = \sum \lg_{10} y$ <br> $a\sum x + b\sum x^2 = \sum (x \times \lg_{10} y)$ |
| $y = a + b \times \lg_{10} x$ | $a \times n + b\sum \lg_{10} x = \sum y$ <br> $a\sum \lg_{10} x + b\sum (\lg_{10} x)^2 = \sum (y \times \lg_{10} x)$ |
| $\lg_{10} y = a + b \times \lg_{10} x$ | $a \times n + b\sum \lg_{10} x = \sum \lg_{10} y$ <br> $a\sum \lg_{10} x + b\sum (\lg_{10} x)^2 = \sum (\lg_{10} x \times \lg_{10} y)$ |
| $y = a \times b^x$ <br> $\lg_{10} y = \lg_{10} a + x \times \lg_{10} b$ | $n \times \lg_{10} a + \lg_{10} b\sum x = \sum \lg_{10} y$ <br> $\lg_{10} a\sum x + \lg_{10} b\sum x^2 = \sum (x \times \lg_{10} y)$ |
| $y = a + b \times x + c \times x^2$ | $a \times n + b\sum x + c\sum x^2 = \sum y$ <br> $a\sum x + b\sum x^2 + c\sum x^3 = \sum xy$ <br> $a\sum x^2 + b\sum x^3 + c\sum x^4 = \sum (x^2 y)$ |
| $y = a + b \times x + c \times \sqrt{x}$ | $n \times \lg_{10} a + b\sum x + c\sqrt{x} = \sum y$ <br> $a\sum x + b\sum x^2 + c\sum \sqrt{x^3} = \sum (xy)$ <br> $a\sum \sqrt{x} + b\sum \sqrt{x^3} + c\sum x = \sum \sqrt{xy}$ |
| $y = a \times b^x \times c^{x^2}$ <br> $\lg_{10} y = \lg_{10} a + x \times \lg_{10} b + x^2 \lg_{10} c$ | $n \times \lg_{10} a + \lg_{10} b\sum x + \lg_{10} c\sum x^2 = \sum \lg_{10} y$ <br> $\lg_{10} a\sum x + \lg_{10} b\sum x^2 + \lg_{10} c\sum x^3 = \sum (x \times \lg_{10} y)$ <br> $\lg_{10} a\sum x^2 + \lg_{10} b\sum x^3 + \lg_{10} c\sum x^4 = \sum (x^2 \times \lg y)$ |

**Source:** Sachs [2].

**Table 2:** Normal equations for the most important functional equations.

3327103,5/16682176=0,199440616.

In the case described is only a «A» factor, factor «M» is already known. It saves time, when a «A» – already known physical, a constant. But we are interested in, as well as received and the factor «M» and the factor «A». And here comes the assistance table ready normal equations (Table 2) for the most important functional equations of the 42-year-old books on health care and biological statistics, written L. Decided by Dr. Lothar Sachs, which does not become obsolete! Supplement table reduction will affect: (Table 3)

Logarithms on different grounds are mutually go at each other. Here are absolutely accurate conversions between and their formulas:

$$\log_{10} x = \log_{10} e \times \ln_e x = \log_{10} 2{,}71828182845904 \times \ln_e x \cong 0{,}434294482 \times \ln_e x;$$

4,060443*0,434294482 = 1,763427989;

$$\ln_e x = \ln_e 10 \times \log_{10} x \cong 2{,}302585093 \times \log_{10} x;$$

1,763428*2,302585 = 4,060443025;

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| Functional equations | Normal equation |
|---|---|
| $\ln_e y = a + b\times\ln_e x$ | $an + b\sum\ln_e x = \sum\ln_e y;$ <br> $a\sum\ln_e x + b\sum(\ln_e x)^2 = \sum(\ln_e x\times\ln_e y).$ |
| $lb_2 y = a + b\times lb_2 x$ | $an + b\sum lb_2 x = \sum lb_2 y;$ <br> $a\sum lb_2 x + b\sum(lb_2 x)^2 = \sum(lb_2 x\times lb_2 y).$ |

**Table 3:** Supplement to Table 2.

| X | y | lnx | lny | ln(x^2) | lnx*lny |
|---|---|---|---|---|---|
| 58 | 88 | 4,060443 | 4,477337 | 16,4872 | 18,17997 |
| 108 | 225 | 4,682131 | 5,4161 | 21,92235 | 25,35889 |
| 150 | 365 | 5,010635 | 5,899897 | 25,10646 | 29,56223 |
| 228 | 687 | 5,429346 | 6,532334 | 29,4778 | 35,4663 |

**Table 4:** The first option baseline data for the coefficients under normal equations.

Logarithm to base 2 - lb (binär):

$$lbx = \frac{\log_{10} x}{\log_{10} 2} = \frac{1}{0{,}301029996}\log_{10} x = 3{,}321928095\log_{10} x;$$

1,763428*3,321928=5,857981017;

$$lbx = \frac{\ln_e x}{\ln_e 2} = \frac{1}{0{,}693147181}\ln_e x = 1{,}442695041\ln_e x;$$

4,060443*1,442695 = 5,85798098 (Table 4).

$$an + b\sum\ln_e x = \sum\ln_e y;$$
$$a\sum\ln_e x + b\sum(\ln_e x)^2 = \sum(\ln_e x\times\ln_e y).$$

4a + 19,18256b = 22,32567;

19,18256a + 92,99381b = 108,5674.

Equations system of the selection can be solved by Gaussian elimination, the decomposition of the triangular matrix or matrix, but saving a place, we will use the calculator equations: answer: Ответ: a = - 64515504413/40046318464 = - 1,611022109, b = 3753809803/2502894904 = 1,499787225,

EXP(-1,611022109) = 0,199683412.

Using differentiation will show you how the system of equations is shown.

$$E(a,b) = \sum_{k=1}^{N}(a + b\times\lg_{10} x - \lg_{10} y)^2.$$

Since we have two variables «a» and «b» - take private derivative works.

Hold b fixed, differentiate E (a, b) with respect a, and get

$$E(a,b) = \sum_{k=1}^{n} u^2,\ if\ \ u = a + b\times\lg_{10} x - \lg_{10} y.\ Here\ \frac{\partial u}{\partial a} = \sum_{k=1}^{n} 1\times a^{1-1} + 0 - 0 = \sum_{k=1}^{n} 1 \quad and$$
$$\frac{\partial E(a,b)}{\partial u} = \sum_{k=1}^{n} 2u^{2-1} = \sum_{k=1}^{n} 2u;$$

$$Respectively: \frac{\partial E(a,b)}{\partial a} = \frac{\partial E(a,b)}{\partial u}\times\frac{\partial u}{\partial a} = \sum_{k=1}^{n} 2u^1\times\sum_{k=1}^{n} 1 = \sum_{k=1}^{n} 2(a + b\times\lg_{10} x - \lg_{10} y)\ \times(1) =$$
$$= 2\sum_{k=1}^{N}(a + b\times\lg_{10} x - \lg_{10} y);\ E'(a) = 0;\ 0 = \sum_{k=1}^{n}(a + b\times\lg_{10} x - \lg_{10} y) = a\sum_{k=1}^{n} 1 + b\sum_{k=1}^{n}\lg_{10} x - \sum_{k=1}^{n} y;$$
$$a\times n + b\sum_{k=1}^{n}\lg_{10} x = \sum_{k=1}^{n}\lg_{10} y.$$

Now hold a fixed and differentiate E (a, b) with respect b, and get (Table 5)

$$E(a,b) = \sum_{k=1}^{n} u^2,\ if\ \ u = a + b\times\lg_{10} x - \lg_{10} y.\ Here\ \frac{\partial u}{\partial b} = \sum_{k=1}^{n} 0 + 1\times b^{1-1}\times\lg_{10} x - 0 = \sum_{k=1}^{n}\lg_{10} x;$$

$$\mathrm{Re}\,spectively: \frac{\partial E(a,b)}{\partial b} = \frac{\partial E(a,b)}{\partial u}\times\frac{\partial u}{\partial b} = \sum_{k=1}^{n} 2u^1\times\sum_{k=1}^{n}\lg_{10} x =$$
$$= \sum_{k=1}^{n} 2(a + b\times\lg_{10} x - \lg_{10} y)^1\times(\lg_{10} x) = \sum_{k=1}^{n} 2(a\lg_{10} x + b(\lg_{10} x)^{1+1} - \lg_{10} y\times\lg_{10} x);$$
$$E'(A) = 0;$$
$$0 = \sum_{k=1}^{n}(a\times\lg_{10} x + b\times(\lg_{10} x)^2 - \lg_{10} y\times\lg_{10} x) = \sum_{k=1}^{n} a\lg_{10} x + \sum_{k=1}^{n} b(\lg_{10} x)^2 - \sum_{k=1}^{n}(\lg_{10} y\times\lg_{10} x);$$
$$a\sum_{k=1}^{n}\lg_{10} x + b\sum_{k=1}^{n}(\lg_{10} x)^2 = \sum_{k=1}^{n}(\lg_{10} y\times\lg_{10} x).$$

$$an + b\sum\lg_{10} x = \sum\lg_{10} y;$$
$$a\sum\lg_{10} x + b\sum(\lg_{10} x)^2 = \sum(\lg_{10} x\times\lg_{10} y).$$

4a + 8,330878b = 9,695915;

8,330878a + 17,53972b = 20,47708.

Use the calculator equations: answer: Ответ: a = - 132105258110/188837937279 = -0,699569483,

b = 566417518315/377675874558 = 1,499745037;

$10^{-0{,}699569483} = 0{,}19972412.$

We can also use the MATLAB program:

```
format long
A=[4.000000 8.330878; 8.330878 17.539720];
det(A)
X=inv(A)*[9.695915 20.477080]'
B=A*X
ans =
0.755351749115995
X =
-0.699569482772034
1.499745036608161
B =
```

| lgx | lgy | lg(x^2) | lgx*lgy |
|---|---|---|---|
| 1,763428 | 1,944483 | 3,109678 | 3,428955 |
| 2,033424 | 2,352183 | 4,134812 | 4,782984 |
| 2,176091 | 2,562293 | 4,735373 | 5,575783 |
| 2,357935 | 2,836957 | 5,559857 | 6,689359 |

**Table 5:** The second option baseline data for the coefficients under normal equations.

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9.695914999999985

.477079999999969

10^-0.699569482772034

ans =

0.199724120426936 (Table 6).

$$an + b\sum \log_2 x = \sum \log_2 y;$$
$$a\sum \log_2 x + b\sum (\log_2 x)^2 = \sum (\log_2 x \times \log_2 y).$$

4a + 27,674578b = 32,20913;

27,674578a + 193,5544b = 225,9688.

Use the calculator equations: answer: Ответ: a = -48432003580/20838054559 = -2,324209462,

B = 62505275423/41676109118 = 1,49978673;

$2^{-2,324209462} = 0,199683985.$

Next will be processing the same sample using the program Microsoft Office Excel, the creature some of its performance indicators we will look at below. The other indicators is well described in the 1 (Tables 7 and 8).

| log2(x) | log2(y) | log2(x^2) | log2(x)*log2(y) |
|---|---|---|---|
| 5,857981 | 6,459432 | 34,31594 | 37,83923 |
| 6,754888 | 7,813781 | 45,62851 | 52,78121 |
| 7,228819 | 8,511753 | 52,25582 | 61,52992 |
| 7,83289 | 9,424166 | 61,35417 | 73,81846 |

**Table 6:** The third option baseline data for the coefficients under normal equations.

The outcome of the withdrawl

| Regression statistics | |
|---|---|
| Multiple R | 0.999991 |
| R-square | 0.999981 |
| Normalized R-square | 0.999972 |
| Standard error | 0.004598 |
| Monitoring | 4 |

Variance analysis

| | DF | SS | MS | F | The significance F |
|---|---|---|---|---|---|
| Regression models. | 1 | 2.251954 | 2.251954 | 106513,2 | 9.39 E-06 |
| The Balance | 2 | 4.23 E-05 | 2.11 E-05 | | |
| Total | 3 | 2.251996 | | | |
| | Rates | Standard error | T-statistics | P-value | The lower 95% |
| Y-intersection | -1,61083 | 0.022157 | -72,7004 | 0.000189 | -1,70617 |
| ln(x) | 1.499748 | 0.004595 | 326.3635 | 9.39 E-06 | 1.479976 |

The balance

| Monitoring | | Predicted ln(y) |
|---|---|---|
| 1 | 4.478809 | *The residue* |
| 2 | 5.411184 | -0,00147 |
| 3 | 5.903858 | 0.004916 |
| 4 | 6.531818 | -0,00396 |

**Table 7:** Summary regression analysis depending on period completing the first four planets, which used Mr. Kepler, on the distance to the Sun (exponential model), which was established by using the Microsoft Office Excel 2007.

| One-Tail F-Test | |
|---|---|
| Critical Value | 18,51282051 |
| Two-Tail Test | |
| Lower Critical Value | -4,30265273 |
| Upper Critical Value | 4,30265273 |

**Table 8:** The limit values F and t-statistic.

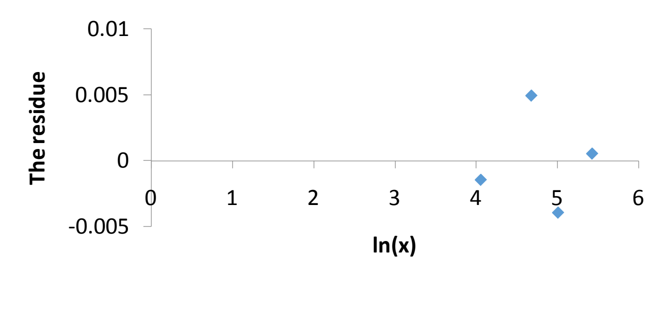


**Figure 4:** The Schedule balances.

Since 106513,2 ≥ 18,51282051 and 9,39E-06 ≤ 0,05, c 95% reliability zero hypothesis is rejected. And further, since 326,3635 ≥ 4,30265273, and 9,39E-06 ≤ 0,05, the zero hypothesis is rejected (Figure 4).

Homoscedasticity has not been identified.

The model will take a view:

$$\ln \hat{Y}_{i_e} = -1,61083 + 1,499748 \times \ln_e X_i;$$

$$\hat{b}_0 = 2,71828182845904^{-1,61083} = 0,199721776;$$

$$\hat{b}_1 = 1,499748;$$

$$\ln \hat{Y}_{i_e} = b_0 + b_1 \times X_i;$$

$$\hat{Y}_i = \hat{b}_0 \hat{X}_i^{\,b_1};$$

$$\hat{Y}_i = 0,199721776 \times \hat{X}_i^{\,1,499748};$$

*Check* :

$$\hat{Y}_{Earth} = 0,199721776 \times 150^{1,499748} = 366,4493\ days;$$

*Predicting the period of the orbit of Jupiter* :

$$\hat{Y}_{Jupiter} = 0,199721776 \times 778,33^{1,499748} = 4329,547\ days;$$

$$4329,547 / 365 = 11,8617726\ Earth\ years.$$

4329,547/365=11,8617726 years, accommodating 2 leap-year, as well as 2 days is 0,005479452, the 11,8617726 +0,005479452 =11,86725205 years.

The site "A large encyclopedia pupil" reports that the period of treatment in the orbit the planet Jupiter is 11.867 years!!!" Mr. Kepler and for today made a perfect calculation.

Dr. Mathews and Dr. Fink presented [3] (3, c.290) in exercises to the chapter "Building a curve on points", resulting in the modern data, which we, and offended in the processing.

The authors give an indication: "The following date give the distances of the nine planets from the sun and their side real period in days. Use it to find the power fit of the form $y = Cx^{3/2}$ for (a) the first four planets and (b) all nine planets" (Tables 9 and 10).

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| Planet | Distance from Sun (км * 10^6) | Sidereal period (days) |
|---|---|---|
| Mercury | 57,59 | 87,99 |
| Venus | 108,11 | 224,7 |
| Earth | 149,57 | 365,26 |
| Mars | 227,84 | 686,98 |
| Jupiter | 778,14 | 4332,4 |
| Saturn | 1427 | 10759 |
| Uranium | 2870,3 | 30684 |
| Neptune | 4499,9 | 60188 |
| Pluto. | 5909 | 90710 |

**Source:** John and Kurtis [3].

**Table 9:** The distance nine planets from the Sun and their star period in days.

The outcome of the withdrawl

| Regression statistics | |
|---|---|
| Multiple R | 0.999998 |
| R-square | 0.999995 |
| Normalized R-square | 0.999993 |
| Standard error | 0.00227 |
| Monitoring | 4 |

Variance analysis

| | DF | SS | MS | F | The significance F |
|---|---|---|---|---|---|
| Regression models. | 1 | 2.253078 | 2.253078 | 437091,8 | 2.29 E-06 |
| The Balance | 2 | 1.03 E-05 | 5.15 E-06 | | |
| Total | 3 | 2.253088 | | | |

| | Rates | Standard error | T-statistics | P-value | The lower 95% | The upper 95% | The lower 95.0 % | The upper 95.0 % |
|---|---|---|---|---|---|---|---|---|
| Y-intersection | -158,024 | 0.010892 | -145,09 | 4.75 E-05 | -162,711 | -153,338 | -162,711 | -153,338 |
| ln(x) | 1.494081 | 0.00226 | 661.1292 | 2.29 E-06 | 1.484358 | 1.503805 | 1.484358 | 1.503805 |

The balance

| Monitoring | Predicted ln(y) | The residue |
|---|---|---|
| 1 | 4.475789 | 0.001435 |
| 2 | 5.416761 | -0,002 |
| 3 | 5.901763 | -0,00115 |
| 4 | 6.530591 | 0.001714 |

**Table 10:** Summary regression analysis depending on the period completing the first four planets, which used Dr. Mathews and Dr. Fink, on the distance to the Sun (exponential model), which was established by using the program Microsoft Office Excel 2007.

Heteroscedasticity in Figure 5 and Table 11. Since 437091,8 ≥ 18,51282051 and 2,29E-06 ≤ 0,05, c 95% reliability zero hypothesis is rejected. And further, since 661,1292 ≥ 4,30265273, and 2,29E-06 ≤ 0,05, the zero hypothesis is rejected.

So, as expected, more than was possible Кеплеру exact formula:

Exp(-1,58024) = 0.20592567.

$T = 0,20592567x^{1,494081}$.

We will do the job "b" (Figure 6, Tables 12 and 13).

Since 9801780 ≥ 5,591447848 and 8,96E-23 ≤ 0,05, c 95% reliability zero hypothesis is rejected. And further, since 3130,779 ≥ 2,364624251, and 8,96E-23 ≤ 0,05, the zero hypothesis is rejected (Figure 7).

Since there is a definite гомоскедастичность, conclusions call for caution.

So, the most accurate formula, which we have been able to calculate:

EXP (-1,603165) = 0,201258526;


**Figure 5:** The Schedule balances.

$T = 0,201258526 \times x^{1,4988974}$.

The F - statistics with 1 and 7 degrees of freedom and largest errors $\alpha = 0,0000000000000000000000896$ as well 9801780, with 0,9 999 999 999 999 999 999 999 104 reliability of the null hypothesis is rejected. On

| One-Tail F-Test | |
|---|---|
| Critical Value | 18,51282051 |
| Two-Tail Test | |
| Lower Critical Value | -4,30265273 |
| Upper Critical Value | 4,30265273 |

**Table 11:** The limit values F and t-statistic.

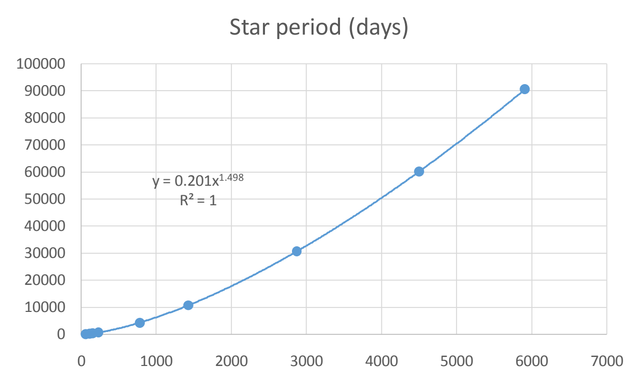



**Figure 6:** The least-squares fit $T = 0,201258526x^{1,4988974}$ for the all nine planets, using Mr. Mathews and Mr. Fink third law of planetary motion.

The outcome of the withdrawl

| Regression statistics | |
|---|---|
| Multiple R | 0.9999996 |
| R-square | 0.9999993 |
| Normalized R-square | 0.9999992 |
| Standard error | 0.0023366 |
| Monitoring | 9 |

Variance analysis

| | DF | SS | MS | F | The significance F |
|---|---|---|---|---|---|
| Regression models. | 1 | 53.51453 | 53.51453 | 9801780 | 8.96 E-23 |
| The Balance | 7 | 3.82 E-05 | 5.46 E-06 | | |
| Total | 8 | 53.51457 | | | |

| | Rates | Standard error | T-statistics | P-value | The lower 95% |
|---|---|---|---|---|---|
| Y-intersection | -1,603,165 | 0.00319 | -502,567 | 3.26 E-17 | -161,071 |
| ln(x) | 1.4988974 | 0.000479 | 3,130,779 | 8.96 E-23 | 1.497765 |

The balance

| Monitoring | Predicted ln(y) | The residue |
|---|---|---|
| 1 | 4.4723886 | 0.004835 |
| 2 | 5.4163946 | -0,00163 |
| 3 | 5.9029596 | -0,00235 |
| 4 | 6.5338142 | -0,00151 |
| 5 | 8.3748542 | -0,00098 |
| 6 | 9.2838202 | -0,00032 |
| 7 | 10.331313 | 0.000184 |
| 8 | 11.005275 | -4,7E-05 |
| 9 | 11.413607 | 0.001816 |

**Table 12:** Summary regression depending on the completion of all 9 planets in orbit on the distance to the Sun (exponential model), with the use of modern data, created by using the program Microsoft Office Excel 2007.

| One-Tail F-Test | |
|---|---|
| Critical Value | 5,591447848 |
| Two-Tail Test | |
| Lower Critical Value | -2,364624251 |
| Upper Critical Value | 2,364624251 |

**Table 13:** The limit values F and t-statistic.

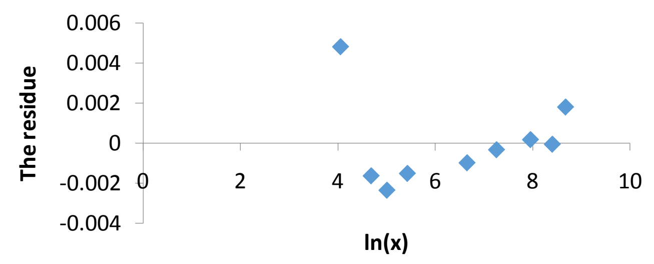
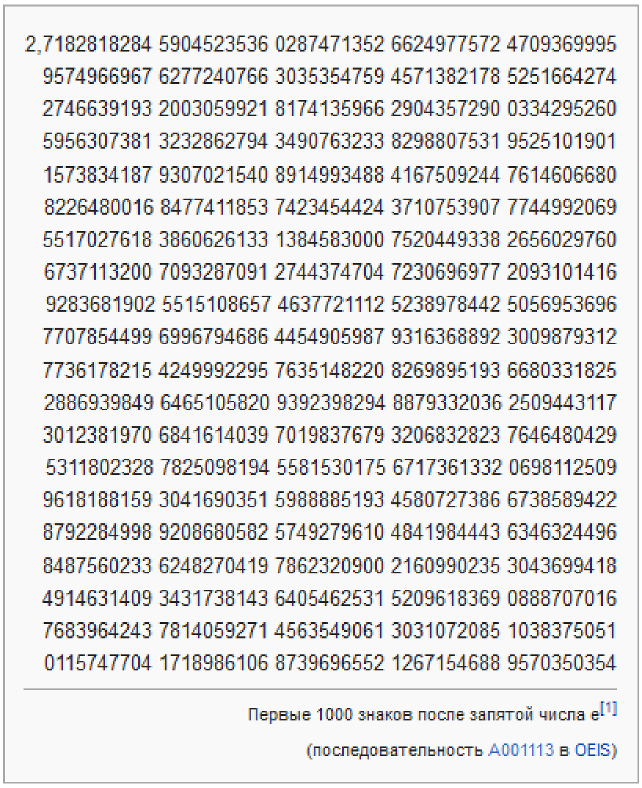



**Figure 7:** The Schedule balances.


2,7182818284 5904523536 0287471352 6624977572 4709369995
9574966967 6277240766 3035354759 4571382178 5251664274
2746639193 2003059921 8174135966 2904357290 0334295260
5956307381 3232862794 3490763233 8298807531 9525101901
1573834187 9307021540 8914993488 4167509244 7614606680
8226480016 8477411853 7423454424 3710753907 7744992069
5517027618 3860626133 1384583000 7520449338 2656029760
6737113200 7093287091 2744374704 7230696977 2093101416
9283681902 5515108657 4637721112 5238978442 5056953696
7707854499 6996794686 4454905987 9316368892 3009879312
7736178215 4249992295 7635148220 8269895193 6680331825
2886939849 6465105820 9392398294 8879332036 2509443117
3012381970 6841614039 7019837679 3206832823 7646480429
5311802328 7825098194 5581530175 6717361332 0698112509
9618188159 3041690351 5988885193 4580727386 6738589422
8792284998 9208680582 5749279610 4841984443 6346324496
8487560233 6248270419 7862320900 2160990235 3043699418
4914631409 3431738143 6405462531 5209618369 0888707016
7683964243 7814059271 4563549061 3031072085 1038375051
0115747704 1718986106 8739696552 1267154688 9570350354

Первые 1000 знаков после запятой числа e[1]
(последовательность A001113 в OEIS)

**Source:** https://en.wikipedia.org/wiki/E_(mathematical_constant) [5].

**Figure 8:** The first 1000 digits to the right of the decimal point in the number of e.

1,11607E + 24 attempts to account for 1 failure. And if we use the first 1000 digits to the right of the decimal point in the number of e (Figure 8), the majority of which the program Microsoft Office Excel does not use, by allowing, as writes Mathews rounding error (3, C. 39), you can speak to the good prospects for success in planetary flights.

The third law isochronism (9): "The squares periods of planets around the Sun are, as well as Cuba large spindles orbits planets". It is true not only for planetary exploration, but also for their satellites.

$$\frac{T^2}{a^3} = const; \quad (2)$$

Where $T$ - Periods of planets around the Sun, as well as well - the length large spindles their orbits.

So, the formula the third act with increasing accuracy.

$$T = 0,199721776x^{1,499748};$$

$$T = 0,20592567x^{1,494081};$$

$$T = 0,201258526x^{1,4988974}.$$

Make the conversion, having the formula (2):

$$T = 0,201258526x^{1,4988974} = 0,201258526x^{\frac{1,4988974\times 2}{2}} = 0,201258526\times\sqrt{x^{2,9977948}};$$

$$T^2 = (0,201258526\times\sqrt{x^{2,9977948}})^2 = 0,040504994\times x^{2,9977948}; \quad \frac{T^2}{x^{2,9977948}} = 0,040504994.$$

$$\frac{T^2}{x^{2,9977948}} = \frac{T^2}{x^{2,9977948}}.$$

We have an obligation to consider and competing option.

$$T = 0,201258526x^{\frac{1,4988974\times 2,00147121}{2,00147121}} = 0,201258526\times\sqrt[2,00147121]{x^3};$$

$$T^2 = (0,201258526\times\sqrt[2,00147121]{x^3})^{2,00147121} = 0,040409572\times x^3; \quad \frac{T^{2,00147121}}{x^3} = 0,040409572.$$

Dr. Mathews and Dr. Fink [3] notes that: "In the practice of numerical analysis it is important to be aware that computed solutions are not exact mathematical solutions. The precision of a numerical solution can be diminished in several subtle ways. Understanding these difficulties can often guide the practitioner in the proper implementation and/or development of numerical algorithms (3, C. 37-38)".

Find absolute and relative error:

$$E_x = \left|x - \hat{x}\right| = 3 - 2,9977948 = 0,0022052;$$

$$R_x = \frac{\left|x - \hat{x}\right|}{x} = \frac{3 - 2,9977948}{3} = 0,000735067.$$

So, numerically error, not overwhelming. But, as pointed out Dr. Mathews and Dr. Fink [3]: "Error may spread in the follow-up calculations". Next, we can completely eliminate this error, by using formula (1), but for this we will need to pay a distortion factor «A»...

e-called Euler's number after the Swiss mathematician Leonhard Euler, $e$ is not to be confused with γ, the Euler–Mascheroni constant, sometimes called simply *Euler's constant*. The number $e$ is also known as Napier's constant, but Euler's choice of the symbol $e$ is said to have been retained in his honor. The constant was discovered by the Swiss mathematician Jacob Bernoulli while studying compound interest (8).

Natural logarithms (ln) as grounds have a

constant

$$e \cong 2,718281 \; (limit\; number\; e = 1 + \frac{1}{1} + \frac{1}{1\times 2} + \frac{1}{1\times 2\times 3} + \frac{1}{1\times 2\times 3\times 4} + ... = 2,708333333.$$

What means 99,99 999 999 999 999 999 999 104% reliability? This means that when throwing coins seventy threefold in a row the emblem is still permitted as likely, while seventy fourfold has already been considered as a "over random". By the theorem of probability for independent events the probability equal to:

$$P_{4x} = (\frac{1}{2})^4 = 0,06250 \rangle 0,05;$$

$$P_{5x} = (\frac{1}{2})^5 = 0,03125 \langle 0,05;$$

$$P_{16x} = (\frac{1}{2})^{16} = 0,000015288 \rangle 9,39\times 10^{-6};$$

$$P_{17x} = (\frac{1}{2})^{17} = 0,00000762939 \langle 9,39\times 10^{-6};$$

$$P_{18x} = (\frac{1}{2})^{18} = 3,8147\times 10^{-6} \rangle 2,29\times 10^{-6};$$

$$P_{19x} = (\frac{1}{2})^{19} = 1,90735\times 10^{-6} \langle 2,29\times 10^{-6};$$

$$P_{73x} = (\frac{1}{2})^{73} = 1,05879\times 10^{-22} \rangle 8,96\times 10^{-23};$$

$$P_{74x} = (\frac{1}{2})^{74} = 5,29396\times 10^{-23} \langle 8,96\times 10^{-23}.$$

I.e. approximately 0,105879E-20% and 0,529396E-21%. So, the statistical reliability 99,99 999 999 999 999 999 999 104% means that accidental emergence circumstances equally incredible, as well as and the event, consisting of the landing emblem in a row 74 times. The likelihood that, when n-purchasable throwing coins each time will fall out emblem, is equal $(1/2)^n$. And is listed in the following table. This is well stated in the 2"(Tables 14 and 15).

| n | $2^n$ | P | |
|---|---|---|---|
| | | $2^{-n}$ | Level |
| 1 | 2 | 0,5 | |
| 2 | 4 | 0,25 | |
| 3 | 8 | 0,125 | |
| 4 | 16 | 0,0625 | ‹10% |
| 5 | 32 | 0,03125 | ‹5% |
| 6 | 64 | 0,01562 | |
| 7 | 128 | 0,00781 | ‹1% |
| 8 | 256 | 0,00391 | ‹0,5% |
| 9 | 512 | 0,00195 | |
| 10 | 1024 | 0,00098 | ≈0,1% |
| 11 | 2048 | 0,00049 | ≈0,05% |
| 12 | 4096 | 0,00024 | |
| 13 | 8192 | 0,00012 | |
| 14 | 16384 | 0,00006 | ‹0,01% |
| 15 | 32768 | 0,00003 | |

**Source:** Sachs [2].

**Table 14:** The probability P that when n-purchasable throwing coins each time it falls out one and the same party, as well as model accidental events.

| N | $2^n$ | P | |
|---|---|---|---|
| | | $2^{-n}$ | Уровень |
| 16 | 65536 | 0,000015288 | $\rangle 9,39\times 10^{-6}$ |
| 17 | 131072 | 0,00000762939 | $\langle 9,39\times 10^{-6}$ |
| 18 | 262144 | $3,8147\times 10^{-6}$ | $\rangle 2,29\times 10^{-6}$ |
| 19 | 524288 | $1,90735\times 10^{-6}$ | $\langle 2,29\times 10^{-6}$ |
| 73 | $9,44473\times 10^{21}$ | $1,05879\times 10^{-22}$ | $\rangle 8,96\times 10^{-23}$ |
| 74 | $1,88895\times 10^{22}$ | $6,61744\times 10^{-24}$ | $\langle 8,96\times 10^{-23}$ |

**Table 15:** Supplement to Table 14.

And here we can show how important it is knowledge binary logarithm:

$$lb_2 0,00000762939 = -17.$$

Dr. Lothar Sachs points out: "If we choose a factor in this, saying that the 95% is the correct and only in 5% wrong, we say: with the statistical reliability S in 95% confidence interval a custom statistics includes the parameter general population". In summary, you want to say: we have 5% -s chances to reject a valid factor equation and the 95 % -s - to take is also a valid factor [5-8].

## Interpolation Probabilities

This method computational complexity (2, with. 152) The value of F-test for $v_1$ and $v_2$. Degrees of Freedom offered. What is it for? In special cases, above all, when target is dangerous to human life, it is necessary to take smaller, than α=0,001 errors. Thus, for example, in the manufacture of vaccines required limit constant anti-serum. Not in fallible measurements must be detected and eliminated. Dr. Sachs notes that: "An unreasonable decision null-hypothesis "anti-serum is correct" means a dangerous error" (2, C. 114). Null-hypothesis - the hypothesis that the two together, the issues from the point of view of one or more signs, are identical, i.e., the actual difference is equal to zero, and the found from experience unlike the zero is random in nature. The average of the $\mu$. The general aggregate, evaluated on the basis random sampling, is not different from the desired values $\mu_0$. And further Sachs writes that science makes a cell network, all less than in order to continuously extend and check all the new hypotheses, the most accurate and the most credibly explaining this world. Gamma is the findings and conclusions will never be *totally reliable, but* they are engaged in the preliminary hypotheses go all the more general and strict theories, a thorough test, have led to a better understanding and peace paradigm (2, C. 112). A summary table value (F=106513, 2, ($v_1$ = 1 and $v_2$ = 2)). Arrange thus between two tabular values ($F_1$, $F_2$) Sound propagation errors $\alpha\, u\, \alpha \times m$, *what* $F_1 \langle F \langle F_2$. Offer cruises and the likelihood that this value will be exceeded. Observed F-value lies between the borders 0,000909091 and 0,000952381% (Table 16).

$$(m.e.\alpha = 00000909091, m = \frac{000952381}{000909091} = 1{,}047619048) : m = \frac{\alpha_1}{\alpha_2};$$

$$F_1 = 104998{,}4947 \langle F = 106513{,}2 \langle 109998{,}489 = F_2;$$

$$k = \frac{F_2 - F}{F_2 - F_1} = \frac{109998{,}489 - 106513{,}2}{109998{,}489 - 104998{,}4947} = 0{,}697058594;$$

$$P = \alpha \times m^k = 0{,}00000909091^{1{,}047619048} = 0{,}00000939053.$$

We will determine the number of standard deviations for the S = 90%. So: P=0.1/2=0.05, z=1.56.

Since in the following table we have t=326.3635, then get confirmation: -331,66 > 326,3635 > 331,66 (Figure 9).

Figures 10-16 using the standard normal probability calculator identified.

Standard deviation: We will determine the arbitrary empirical F-test (2, P. 152), and in particular for values with a P>0.1, an attacker who successfully exploited this an approximation, the proposed [9,10], which is true for the number of degrees of freedom, not less than three (the greater number of degrees of freedom, the better approximation), and meaningful probability is defined as the area, the corresponding z-the limits on both ends of normal distribution. In Tables 7, 10 and 12 f-value, equal to 106513,2, 437091,8 и 9801780.

| Reliability S, % | | 90 | 95 | 95,44 | 99 | 99,73 | 99,9 | 99,99 | 99,9936 | 99,999061 | 99,999771 | 99,9999999999999999999104 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| The probability Errors, α % | | 10 | 5 | 4,56 | 1 | 0,27 | 0,1 | 0,01 | 0,0064 | 9,39E-04 | 2,29E-04 | 8,96E-21 |
| The number of standard Event, δ | | 1,645 | 1,96 | 2 | 2,576 | 3 | 3,291 | 3,891 | 4 | 3,282648896 | 3,302014256 | 5,769823 |
| The limits The values F-Statistics | With $v_1$=1 and $v_2$ = 2 degrees of freedom | 8,526315789 | 18,51282051 | 20,44149055 | 98,50251256 | 368,8710463 | 998,5002501 | 9998,500025 | 15623,50001 | 106494,7726 | 436679,7227 | 1,11607E+22 |
| | With $v_1$=1 and $v_2$ = 7 degrees of freedom | 3,589428091 | 5,591447851 | 5,891849714 5,891849714 | 12,24638335 12,24638335 | 20,52008826 | 29,24519336 | 62,16666899 | 71,45944059 | 128,1674091 | 194,887441 | 9801128,085 |
| The limits The values of t - Statistics | With v = 2 degrees of freedom | -2,91998558 | -4,30265273 | - 4,521226664 | -9,924843201 | -19,20601589 | -31,59905458 | -99,99249984 | -124,994 | -326,3353683 | -660,8174655 | -1,05644E+11 |
| | With v = 2 degrees of freedom | 2,91998558 | 4,30265273 | 4,521226664 | 9,924843201 | 19,20601589 | 31,59905458 | 99,99249984 | 124,994 | 326,3353683 | 660,8174655 | 1,05644E+11 |
| The limits The values of t - Statistics | With v = 7 degrees of freedom | -1,894578605 | -2,364624252 | -2,427313271 | -3,499483297 | -4,529910403 | -5,407882521 | -7,884584262 | -8,453368594 | -11,32110459 | -13,96020921 | -3130,67534 |
| | With v = 7 degrees of freedom | 1,894578605 | 2,364624252 | 4,521226664 | 3,499483297 | 4,529910403 | 5,407882521 | 7,884584262 | 8,453368594 | 11,32110459 | 13,96020921 | 3130,67534 |

**Table 16:** Final Standings for reliability, standard deviation, limit values of F and t-statistics for the main error probabilities, supplemented by data Tables 7, 10 and 12.

**Citation:** Taenvat MM (2015) Power Regression as an Example of the Third Law of Hotels in Paris: Planets. J Astrophys Aerospace Technol 3: 124. doi:10.4172/2329-6542.1000124



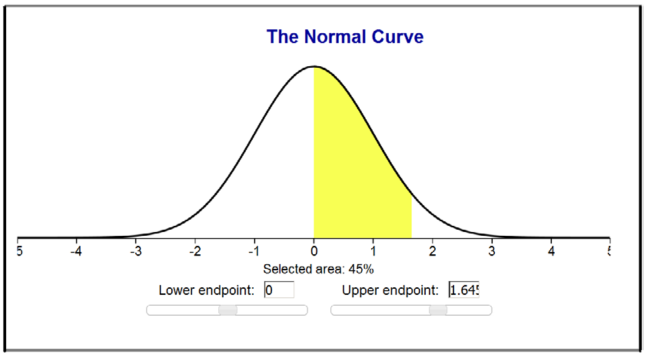



**Figure 9:** Interactive Builder standard normal probability plots.

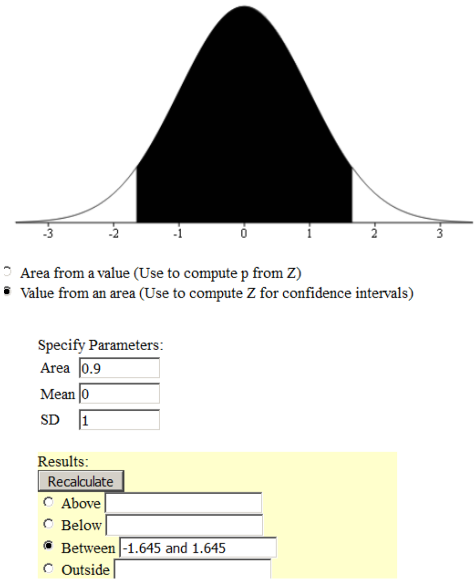



**Figure 10:** Standard normal probability Calculator [11].

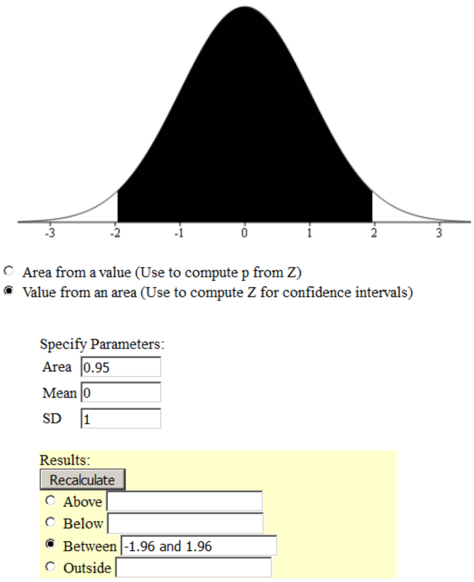



**Figure 11:** Standard normalprobability Calculator.

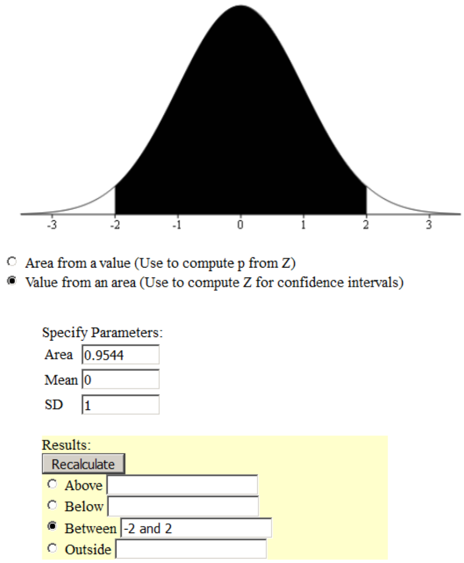



**Figure 12:** Standard normalprobability Calculator.

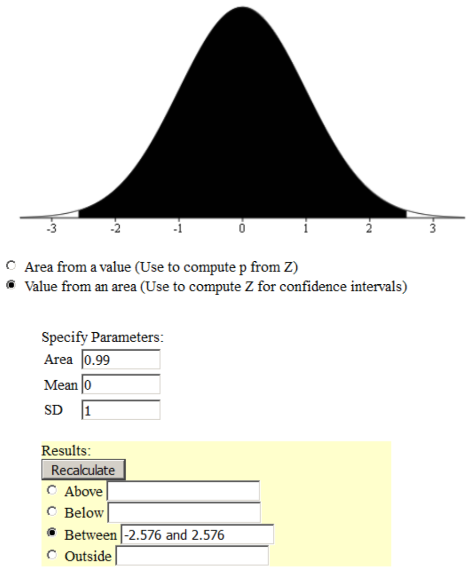



**Figure 13:** Standard normalprobability Calculator.

$$\hat{z} = \frac{(1+\frac{2}{9\times\nu_2})\times F^{1/3} - (1-\frac{2}{9\times\nu_1})}{\sqrt{\frac{2}{9\times\nu_2}\times F^{2/3} + \frac{2}{9\times\nu_1}}};$$

$$\hat{z} = \frac{(1+\frac{2}{9\times 2})\times 106513,2^{1/3} - (1-\frac{2}{9\times 1})}{\sqrt{\frac{2}{9\times 2}\times 106513,2^{2/3} + \frac{2}{9\times 1}}} = 3,282648896;$$

$$\hat{z} = \frac{(1+\frac{2}{9\times 2})\times 437091,8^{1/3} - (1-\frac{2}{9\times 1})}{\sqrt{\frac{2}{9\times 2}\times 437091,8^{2/3} + \frac{2}{9\times 1}}} = 3,302014256;$$

**Citation:** Taenvat MM (2015) Power Regression as an Example of the Third Law of Hotels in Paris: Planets. J Astrophys Aerospace Technol 3: 124. doi:10.4172/2329-6542.1000124



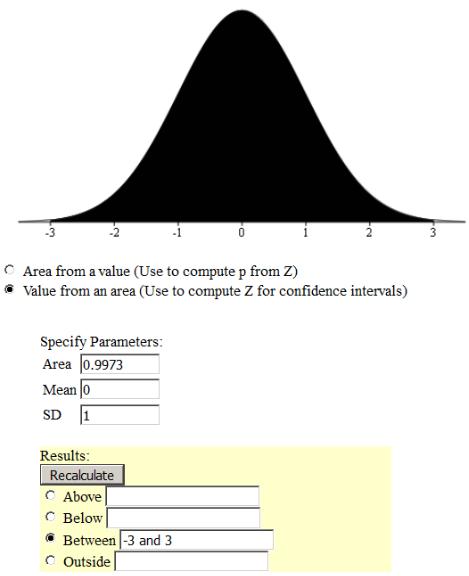



**Figure 14:** Standard normalprobability Calculator.

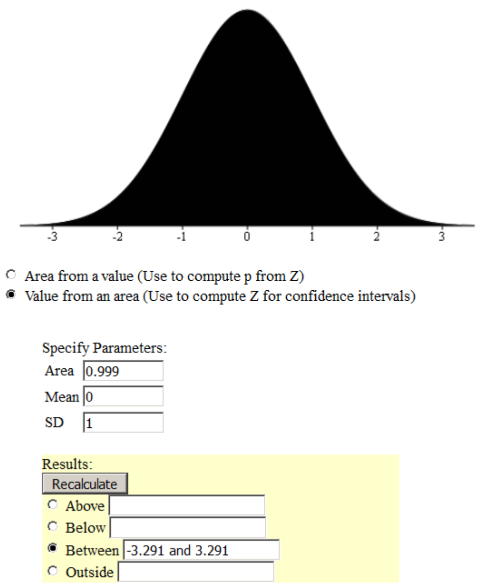



**Figure 15:** Standard normalprobability Calculator.

$$\hat{z} = \frac{(1+\frac{2}{9\times7})\times9801780^{1/3}-(1-\frac{2}{9\times1})}{\sqrt{\frac{2}{9\times7}\times9801780^{2/3}+\frac{2}{9\times1}}} = 5,769823.$$

Now it remains to substitute the values found in Table 17. The probabilities are respectively equal to 0,00052 and 0,00048. Substitution in java normal probability calculator (Figure 16) provides answers 0,0 005 141 833, 0,0 004 799 659 and 0,0 000 000 039.

On the Figure 17 area under the curve normal distribution from z to ∞ probability that the variable Z will take the value ≥ z P<0,0 000 000 039. Since:

$$\mu \pm 1,96\sigma, or\ z = \pm 1,96\ cover\ 95\%\ whole\ area$$
$$(P = 0,025; 0,025\times2 = 0,05; 1-0,05 = 0,95)\ and$$

$$\mu \pm 3\sigma, or\ z = \pm 3\ cover\ 99,73\%\ whole\ area$$
$$(P = 0,0013; 0,0013\times2 = 0,0026;\ 1-0,0026 = 0,9974)\ and$$

$$\mu \pm 5,769823\sigma, or\ z = \pm 5,769823\ covered\ at\ least\ 99,99999192\%\ whole\ area$$
$$(0,0000000039\times2 = 0,0000000078;\ 1-0,0000000078 = 0,9999999922).$$

Since $\hat{z} = 5,769823$, likelihood of errors $\alpha = \hat{z}\times$ 2=0,000000039×2=0,0000000078 hence the statistical reliability S=1 -

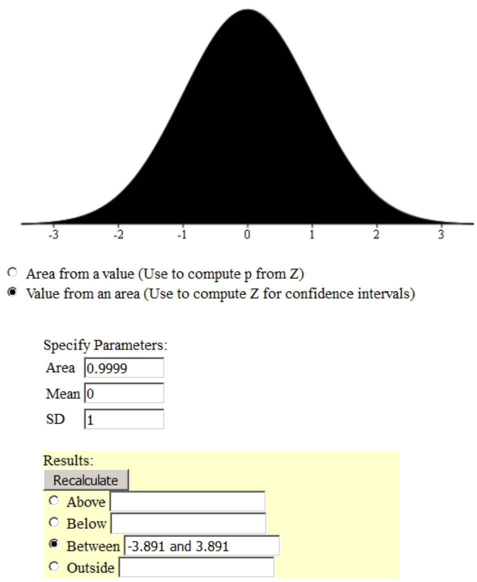



**Figure 16:** Standard normalprobability Calculator.

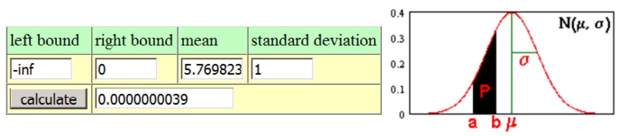



**Figure 17:** Java Normal Probability Calculatorhigh Power.

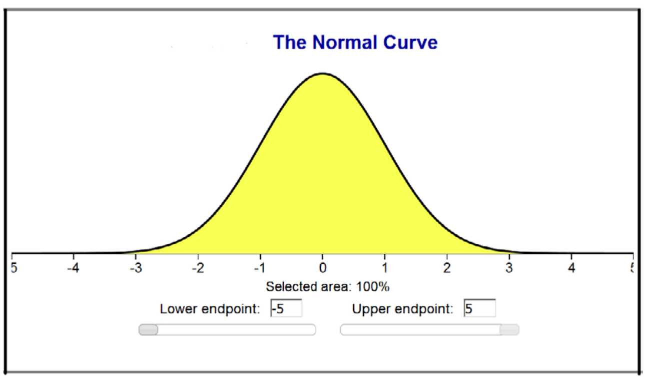



**Figure 18:** The window (15) shader graph normal distribution for 99,99 999 922% reliability.

| z | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 |
|---|---|---|---|---|---|---|---|---|---|---|
| -4.0 | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00002 | 0.00002 | 0.00002 | 0.00002 |
| -3.9 | 0.00005 | 0.00005 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00003 | 0.00003 |
| -3.8 | 0.00007 | 0.00007 | 0.00007 | 0.00006 | 0.00006 | 0.00006 | 0.00006 | 0.00005 | 0.00005 | 0.00005 |
| -3.7 | 0.00011 | 0.00010 | 0.00010 | 0.00010 | 0.00009 | 0.00009 | 0.00008 | 0.00008 | 0.00008 | 0.00008 |
| -3.6 | 0.00016 | 0.00015 | 0.00015 | 0.00014 | 0.00014 | 0.00013 | 0.00013 | 0.00012 | 0.00012 | 0.00011 |
| -3.5 | 0.00023 | 0.00022 | 0.00022 | 0.00021 | 0.00020 | 0.00019 | 0.00019 | 0.00018 | 0.00017 | 0.00017 |
| -3.4 | 0.00034 | 0.00032 | 0.00031 | 0.00030 | 0.00029 | 0.00028 | 0.00027 | 0.00026 | 0.00025 | 0.00024 |
| -3.3 | 0.00048 | 0.00047 | 0.00045 | 0.00043 | 0.00042 | 0.00040 | 0.00039 | 0.00038 | 0.00036 | 0.00035 |
| -3.2 | 0.00069 | 0.00066 | 0.00064 | 0.00062 | 0.00060 | 0.00058 | 0.00056 | 0.00054 | 0.00052 | 0.00050 |
| -3.1 | 0.00097 | 0.00094 | 0.00090 | 0.00087 | 0.00084 | 0.00082 | 0.00079 | 0.00076 | 0.00074 | 0.00071 |
| -3.0 | 0.00135 | 0.00131 | 0.00126 | 0.00122 | 0.00118 | 0.00114 | 0.00111 | 0.00107 | 0.00103 | 0.00100 |
| -2.9 | 0.00187 | 0.00181 | 0.00175 | 0.00169 | 0.00164 | 0.00159 | 0.00154 | 0.00149 | 0.00144 | 0.00139 |
| -2.8 | 0.00256 | 0.00248 | 0.00240 | 0.00233 | 0.00226 | 0.00219 | 0.00212 | 0.00205 | 0.00199 | 0.00193 |
| -2.7 | 0.00347 | 0.00336 | 0.00326 | 0.00317 | 0.00307 | 0.00298 | 0.00289 | 0.00280 | 0.00272 | 0.00264 |
| -2.6 | 0.00466 | 0.00453 | 0.00440 | 0.00427 | 0.00415 | 0.00402 | 0.00391 | 0.00379 | 0.00368 | 0.00357 |
| -2.5 | 0.00621 | 0.00604 | 0.00587 | 0.00570 | 0.00554 | 0.00539 | 0.00523 | 0.00508 | 0.00494 | 0.00480 |
| -2.4 | 0.00820 | 0.00798 | 0.00776 | 0.00755 | 0.00734 | 0.00714 | 0.00695 | 0.00676 | 0.00657 | 0.00639 |
| -2.3 | 0.01072 | 0.01044 | 0.01017 | 0.00990 | 0.00964 | 0.00939 | 0.00914 | 0.00889 | 0.00866 | 0.00842 |
| -2.2 | 0.01390 | 0.01355 | 0.01321 | 0.01287 | 0.01255 | 0.01222 | 0.01191 | 0.01160 | 0.01130 | 0.01101 |
| -2.1 | 0.01786 | 0.01743 | 0.01700 | 0.01659 | 0.01618 | 0.01578 | 0.01539 | 0.01500 | 0.01463 | 0.01426 |
| -2.0 | 0.02275 | 0.02222 | 0.02169 | 0.02118 | 0.02067 | 0.02018 | 0.01970 | 0.01923 | 0.01876 | 0.01831 |
| -1.9 | 0.02872 | 0.02807 | 0.02743 | 0.02680 | 0.02619 | 0.02559 | 0.02500 | 0.02442 | 0.02385 | 0.02330 |
| -1.8 | 0.03593 | 0.03515 | 0.03438 | 0.03362 | 0.03288 | 0.03216 | 0.03144 | 0.03074 | 0.03005 | 0.02938 |
| -1.7 | 0.04456 | 0.04363 | 0.04272 | 0.04181 | 0.04093 | 0.04006 | 0.03920 | 0.03836 | 0.03754 | 0.03673 |
| -1.6 | 0.05480 | 0.05370 | 0.05262 | 0.05155 | 0.05050 | 0.04947 | 0.04846 | 0.04746 | 0.04648 | 0.04551 |
| -1.5 | 0.06681 | 0.06552 | 0.06425 | 0.06301 | 0.06178 | 0.06057 | 0.05938 | 0.05821 | 0.05705 | 0.05592 |
| -1.4 | 0.08076 | 0.07927 | 0.07780 | 0.07636 | 0.07493 | 0.07353 | 0.07214 | 0.07078 | 0.06944 | 0.06811 |
| -1.3 | 0.09680 | 0.09510 | 0.09342 | 0.09176 | 0.09012 | 0.08851 | 0.08691 | 0.08534 | 0.08379 | 0.08226 |
| -1.2 | 0.11507 | 0.11314 | 0.11123 | 0.10935 | 0.10749 | 0.10565 | 0.10383 | 0.10204 | 0.10027 | 0.09852 |
| -1.1 | 0.13566 | 0.13350 | 0.13136 | 0.12924 | 0.12714 | 0.12507 | 0.12302 | 0.12100 | 0.11900 | 0.11702 |
| -1.0 | 0.15865 | 0.15625 | 0.15386 | 0.15150 | 0.14917 | 0.14686 | 0.14457 | 0.14231 | 0.14007 | 0.13786 |
| -0.9 | 0.18406 | 0.18141 | 0.17878 | 0.17618 | 0.17361 | 0.17105 | 0.16853 | 0.16602 | 0.16354 | 0.16109 |
| -0.8 | 0.21185 | 0.20897 | 0.20611 | 0.20327 | 0.20045 | 0.19766 | 0.19489 | 0.19215 | 0.18943 | 0.18673 |
| -0.7 | 0.24196 | 0.23885 | 0.23576 | 0.23269 | 0.22965 | 0.22663 | 0.22363 | 0.22065 | 0.21769 | 0.21476 |
| -0.6 | 0.27425 | 0.27093 | 0.26763 | 0.26434 | 0.26108 | 0.25784 | 0.25462 | 0.25143 | 0.24825 | 0.24509 |
| -0.5 | 0.30853 | 0.30502 | 0.30153 | 0.29805 | 0.29460 | 0.29116 | 0.28774 | 0.28434 | 0.28095 | 0.27759 |
| -0.4 | 0.34457 | 0.34090 | 0.33724 | 0.33359 | 0.32997 | 0.32635 | 0.32276 | 0.31917 | 0.31561 | 0.31206 |
| -0.3 | 0.38209 | 0.37828 | 0.37448 | 0.37070 | 0.36692 | 0.36317 | 0.35942 | 0.35569 | 0.35197 | 0.34826 |
| -0.2 | 0.42074 | 0.41683 | 0.41293 | 0.40904 | 0.40516 | 0.40129 | 0.39743 | 0.39358 | 0.38974 | 0.38590 |
| -0.1 | 0.46017 | 0.45620 | 0.45224 | 0.44828 | 0.44433 | 0.44038 | 0.43644 | 0.43250 | 0.42857 | 0.42465 |
| -0.0 | 0.50000 | 0.49601 | 0.49202 | 0.48803 | 0.48404 | 0.48006 | 0.47607 | 0.47209 | 0.46811 | 0.46414 |

**Source:** http://www.psychstat.missouristate.edu/introbook/sbk00.htm [10].

**Table 17:** Standard Normal Probabilities: (The table is based on the area P under the standard normal probability curve, below the respective z-statistic).

0,0 000 000 078 = 0,9 999 999 922 (Draw.18.). Confirmed waiting, that the condition above (Figure 18).

Let's take a look at link F and 1 /F and $v_1 u v_2$ (2, C. 150):

$$F(\nu_1,\nu_2;1-\alpha)=\frac{1}{F(\nu_2,\nu_1;\alpha)}. \quad (1)$$

For a ratio of 1 to easily calculate the $F_{0,05}$ With a known $F_{0,05}$. If given $\nu_1 = 1\grave{e}\,\nu_2 = 2; \alpha = 0,05, F = 18,51$. Find F for: $\nu_1 = 1\grave{e}\,\nu_2 = 2; \alpha = 0,95$. Define for $\nu_1 = 2\grave{e}\,\nu_2 = 1; \alpha = 0,05, F = 199,5$ (2, C. 138-149), where a search value equal to 1/199.5 =0.00501. The program Microsoft Office Excel provides the answer F = 0,005012531. A method of getting the data manually is still necessary because of the computer crashes, the lack of power sleep, as it was in Abkhazia.

## Conclusion

In conclusion, it should be noted that the reliability S=99,999 061%, obtained for legacy Kepler equation even today sounds, because the default is used S=95%. Starting rocket to Mars, you will receive the error α=9,39E-04% - the missiles will not be different, but good will. Why is the same not excellent? Mathews is responsible (3, C. 49-50): "many real data contain uncertainty or error. This error type is treated as noise. It affects the accuracy for any numerical calculations, which are data. Improving the accuracy is not achieved when successful calculations, using noisy data".

Submitted by Dr. Mathews source, as expected, in the job "a" have greatly reduced error; in the job "b" error on the merits has no disappeared. But the relationship has become less stochastic and more functional [11].

Dr. Uotshem and Dr. Parramou [12] say that the new literature and new methods for applying quantitative techniques, previously used only in physics, at the same time, regurgitation and adapting technology quantitative analysis to the economy. But many economists should be ready to be done and the return path is to raise agriculture and to rebuild factories.

It will be recalled that, and nonlinear models are acceptable for the calculations in the economy. This is difficult, but Russians traveling medicine in Germany and the "MAZ" do not equal "Mercedes" largely on errors in the calculations.

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