

New exponential formulas Making method and 2 variables formula finding formula having both direction and magnitude

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Abstract: In this paper I have introduced both 2 variables formula making method having both vector and magnitude property and mainly discussed new method of making exponential formulas. From this exponential making formula method if we have graph then we can find formulas. This method of exponential formulas can use in physics and mathematics to find formulas. it is (exponential formulas method) different from previous because the method discuss previously is different from it .It(exponential formulas method) make calculation less complicated in solving and making solution of equation fast to get results . It(exponential formulas method) doesn't need to keep a multiple variables at fixed constant values multiple time . It(exponential formulas method) requires graphical values and graph. it is best approach for graphical interpretation.

Key Words: Exponential formulas interpretation from graph, two variables formula making method, method of making exponential formulas with graph.

I.INTRODUCTION

In this method first we discussed method of fitting exponential formula and its limitations then we discussed examples on which we test this method of fitting formula. Also we analyze two variables formula making method. Finally we talk about conclusion.

II. TWO VARIABLES FORMULA FINDING FORMULA HAVING BOTH DIRECTI AND MAGNITUDE

Formula making method having formulas used

$$Y=C1*x^n+c2$$

Iteration method

$$nf = ni - \alpha(y1 - (\frac{y1 - y2}{x1^{ni} - x2^{ni}} * (x1^{ni} - x3^{ni}) + y3))$$

$$c1 = \frac{y1 - y2}{x1^n - x2^n}$$

$$c2 = y3 - c1 * x3^n$$

(y1 =4.1 x1=1),(y2=4.4 , x2=2) and (y3=4.9 ,x3=3)

Powers in range (-4,-3,-2,-1,1,2,3,4)

First we check if nf is less then -4 or greater then 4 then we change negative to positive alpha or positive to negative alpha

ni	nf	nf-ni	Alpha
-4	-4.8	0.8	-1
4	4.9	0.9	-1

So we change from negative to positive alpha

ni	nf	nf-ni	Alpha
-4	-3.1	0.9	1
4	3	1	1
3	2.7	0.3	1
2	2.1	0.1	1

We see at 2 and 3 there occur direction changes so values among 2 or 3 and also $|n_i - n_f|$ is minimum at 2 so power is 2
 So it has both magnitude and direction
 $C1=0.14$ and $C2=4.11$

III. NEW EXPONENTIAL FORMULA MAKING METHOD

The general graphical equation can be written as

$$y = c1 * a^{n1} * b^{n2} * \dots * e^{c2 * a^{m1} * b^{m2} * \dots}$$

Now suppose if there is only one term of variable present in exponential with any power, now suppose that variable is x then formulas look like

$$y = c1 * a^{n1} * b^{n2} * \dots * e^{c2 * x^{m1} * a^{m2} * b^{m3} * \dots} \quad - eq1$$

Now at $x=0$, means the values of y intercept when we draw a graph then equation (eq1) look like at y intercept

$$y = c1 * a^{n1} * b^{n2} * \dots \quad - eq2$$

Now if we take $\ln$ both side then we get

$$\ln(y) = \ln(c1) + n1 * \ln(a) + n2 * \ln(b) * \dots \quad - eq3$$

Solving linear equations of eq3 by putting y, a, b, ... Values, gives eq2

Our next step is solving equation below, which comes from eq1

$$\frac{y}{c1 * a^{n1} * b^{n2} * \dots} = e^{c2 * x^{m1} * a^{m2} * b^{m3} * \dots} \quad - eq4$$

Now taking $\ln$ along both the sides

$$\ln\left(\frac{y}{c1 * a^{n1} * b^{n2} * \dots}\right) = c2 * x^{m1} * a^{m2} * b^{m3} * \dots \quad - eq5$$

Now taking log again in eq5 gives

$$\ln\left(\ln\left(\frac{y}{c1 * a^{n1} * b^{n2} * \dots}\right)\right) = \ln(c2) + m1 * \ln(x) + m2 * \ln(a) + m3 * \ln(b) * \dots \quad - eq6$$

Solving linear eq6 by putting values we will get variables values of $c2, m1, m2, m3, \dots$ and from it original equation.

IV. TESTING IT

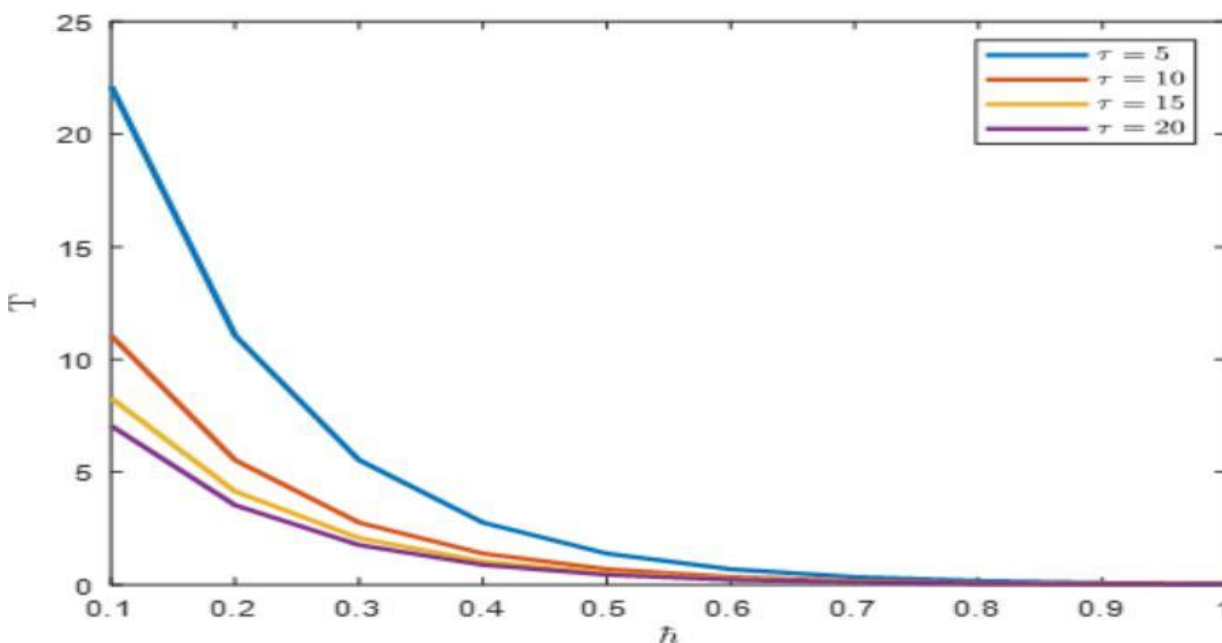
From below graph we will apply method over this to find equation or formula law on it

We have two variables tau and h as a function of T

So we first find intercept values of T and tau

So expected equation would be from graphical analysis

$$T = c1 * t^{n1} * e^{c2 * h^{m1}}$$



First finding intercept , it will gives c_1, n_1 values

T	tau
5.5	20
22.5	5

So expected equation would be solved as

$$T = c_1 * t^{n_1}$$

Taking ln along both side

$$\ln(T) = \ln(c_1) + n_1 * \ln(t)$$

Putting values gives

$$\ln(5.5) = \ln(c_1) + n_1 * \ln(20) \text{ -eq7}$$

$$\ln(22.5) = \ln(c_1) + n_1 * \ln(5) \text{ -eq8}$$

Solving eq7 and eq8 gives

$$T = 115.4738t^{-1}$$

Now finding remaining part of equation which is

$$\frac{T}{115.4738t^{-1}} = e^{c_2 * h^{m_1}}$$

$$\ln\left(\frac{T}{115.4738t^{-1}}\right) = c_2 * h^{m_1}$$

$\ln(T/(115.4738t^{-1}))$	T	t	h
-0.7417	11	5	0.2
-1.5301	5	5	0.3

$$\ln(\ln(T/(115.4738t^{-1}))) = \ln(c_2) + m_1 * \ln(h)$$

$$\ln(0.7417) = \ln(c_2) + m_1 * \ln(0.2) \text{ --eq9}$$

$$\ln(1.5301) = \ln(c_2) + m_1 * \ln(0.3) \text{ --eq10}$$

Solving eq9 and eq10 gives

$$\ln\left(\frac{T}{115.4738t^{-1}}\right) = 13.1407h^{1.786}$$

Now resolving negative sign

$$\ln\left(\frac{T}{115.4738t^{-1}}\right) = -13.1407h^{1.786}$$

Final equation as $T = 115.4738t^{-1} * e^{-13.1407h^{1.786}}$

V. CONCLUSION

Its all conclude that this method is effective but it has limitation that it's should contain atleast in exponential power but also not multiplied with exponential function. It is very fast in calculation. Comparing with other method where we have to keep all other variables at constant values by varying each variables with y. But these method have no limitation of graphical values and only one term in exponential power and also from two variables formula making method having both directions and magnitude.

Reference

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