SOME BIOLOGICAL PROCESSES USING DIFFERENTIAL EQUATIONS STUDY

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ABSTRACT

Their action in various biological processes, including the processes occurring in the laws of nature has. Qonuniyat some of the same biological processes can occur, in this case to make them easier to learn. O'garuvchi the relationship between the amount of the differential surge or the possibility of their network and finding. Bit o'rganilayongan differential equations jarayonning will consist of mathematical models. How much does this model is perfect so that the data obtained as a result of the application of differential equation provides a full description of the process. Interestingly enough biologiyada differential equations can be characterized by a variety of different processes occurring. This "one arrow, two crows throw" of any given mathematical model using differential equations is that it allows you to learn full when using this model, various biological yarayonlarni learn them, allow me to explain. Below are several issues to confirm this idea on quotes.

THE ANALYSIS OF THE LITERATURE AND METHODS

At [1] academic M. S.Salohitdinov, N. F.Nasritdinov differential equations, physics, economics, biology, chemistry, medicine and other sciences many processes occurring in characterized using differential equations noted thats. [2] at medicine and biologiyaat functional - differential equations, the methodology of'llab to issues illuminated, A. K.Yusupova, D.M. Saidaxmedova [3] while business, biologiyada in this comment some issues using differential equations in physicssh, learn themi litare. Yusupova a. k., M. murodova of [4] mentioned in ancient medical issues by way of mathematical methods of chargingare.

RESULTS AND DISCUSSION

So what is a universal method of studying biological processes, differential equations, and prove that kjo'rsatish number of biologicalarayonlarning differential equations that can learn using we show using a number of examples.

1-issue. The law of the reproduction of bacteria.

A certain time in the range of bto a member of the reproduction rate of bacteria the number of bacteria proportsional isdi. That depends on the change of the time until you find the number of bacteria.

That depends on the time until the change of the number of bacteria topish h forthe number of bacteria which is available at the time ozirgi x the understanding of that character. Then

$$\frac{dx}{dt} = kx$$

tyou will generate the most interaction, here the k - ratio coefficient.

It formedshbu differential equationsto solve for we will separate the variables :
dx = kxdr

$$\frac{dx}{x}a = kd$$

$$\int \frac{dx}{x} = \int kd \text{ the}$$

$$\ln x = ct + \ln C$$

or

$$\ln x = e^{ct} + \ln C$$

The last expression wefrom

$$x = Ce^{ct}$$

the   general   solution   will   yield.

$$t = 0 , x = x_0$$

we assume that,

$C = x_0$

come out. Consequently,

$$x = x_0 e^{ct}$$

trepresents the law of the increase of bacteria englama with the passage of time. Thus, favorable conditions increase with the passage of time in accordance with the law of bacteria in eksponensial happenin the analytical method of work we have before the show.

This law not only theoretical but also a practical perspective will interest both. Unto the population, will create favorable conditions forlsa, very quick in a period the number of population can grow with a fast pace.

In this sense the story about Penitsillin a sign. This antibiotic find it in the form of fungi grow in good conditions most started. They are very well fed, of course, they are protected from harmful influences the type ofrose. The future crop of the above formula to calculate specific it was. Eksponensial in accordance with the law, which increased within a short time the whole world of mushrooms penitsillin provided valuable drugs.

"Environmental bang" the so-called process of increased eksponensial is subject to the law, that is, he or biological species this for favorable conditions to create, in a short period of time their number at a fast pace will increase. For example, a pack of insects (locust, the fly and others) that's fatal bosqin of, adapted to the climate of the unexpected consequences can show rabbits in australia.

2-issue. The law of growth the cells with the passage of time.

The cells on the surface of its volume ratio to stick to thecha - shaped cell growth rate dl/dt is the length of the cell at a certain time . l manual:

$$\frac{dl}{dt} = (\alpha - \beta)l$$

here α and β - erosion processes and the synthesis of a character are konstant.

We will solve this differential equation that is formed to separate the variables :

$$\frac{dl}{l} = (\alpha - \beta)dt$$

va integrallab the last equation

$$\int \frac{dl}{l} = \int (\alpha - \beta)dt$$
$$\ln at = (\alpha - \beta)t + C \ln$$
$$\ln at = \ln e^{(\alpha-\beta)t} + \ln C$$

equally as well is formed. The last equal

$$l = Ce^{(\alpha-\beta)t}$$

the general solution will yield.

The solution of this differential private solutionto find from we may use the following initial conditions: $t = 0$ at $l = l_0$ that is colossal

$$l = l_0 e^{(\alpha-\beta)t},$$

that is, the cell length of eksponent speed grow.

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