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METHOD OF TEACHING DIFFERENTIATED ISSUES

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Abstract:

Together with the report, practical, laboratory training is also an important form of training review. The internship strengthens the topic, expanding and deepening knowledge, grows knowledge. The use of students using modern technologies in the course of the textbook, using pedagogical technologies.

Keywords: Differential, issue, teaching, equation, process, metatics, modeling, theory.

Differential equations are widely used for mathematical modeling of events in various branches of science. Below

$$\varphi=(x,y,\ldots y^{(n)}) = 0 \qquad (1)$$

In differential equation, the primary point in the function y (x) is an initial n of the function and its X argument.

It is known from the theory of differentialization equations. The equation is equivalent to the system of the first upper N indicated below.

$$\varphi=(x,y_1, y_1', y_2,y_2'\ldots. \ y_n\ y'_n) = 0 \qquad (2)$$

бу ерда k=1,2,…n

The methods of solving differential equations are often based on the issue of Koshi. The issue of Koshi is also known as the issues given to the initial terms. The deputy issue of Koshi is characterized as follows.

Differential equations also must be given in the initial condition of the function y (x), except the initial (1) equation and its derivatives of its derivatives.

$$y(x_0) = y_0,\ y'(x_0) = y_{10},\ \ldots.,y^{(n-1)}(x_0) = y_{n-1,0}$$

(2) Primary conditions for different differential equations are provided in the following form.

$$Y_1(x_0) = y_{10},\ y'_2(x_0) = y_{20},\ \ldots.,y_n(x_0) = y_{n,0} \qquad (3)$$

The Eunler Method formula is as follows

$$y_{i+1} = y_i + h \cdot f(x_i, y_i), \quad i = 0,1,2,... \qquad (4)$$

The Runge Tutta formula is as follows

The Runge-Tutta Putta method is performed through the following formula computing in step.

$$y_{i+1} = y_i + \Delta y_i.$$

$$\Delta y_i = \frac{1}{6}\left[k_1^{(i)} + 2\left(k_2^{(i)} + k_3^{(i)}\right) + k_4^{(i)}\right] \qquad (5)$$

Here $k_1^{(i)}$, $k_2^{(i)}$, $k_3^{(i)}$, $k_4^{(i)}$ counted as follows.

$$\begin{cases} k_1^{(i)} = hf(x_i, y_i), \\ k_2^{(i)} = hf(x_i + \frac{h}{2}, y_i + \frac{k_1^{(i)}}{2}), \\ k_3^{(i)} = hf(x_i + \frac{h}{2}, y_i + \frac{k_2^{(i)}}{2}), \\ k_4^{(i)} = hf(x_i + h, y_i + k_3^{(i)}). \end{cases} \qquad (6)$$

Programming in the language of this differential problem (S ++), the result is obtained by performing it in the Mathcad program.

Instance 1 $y' = 0,7y - x^5, y_0 = 1,7, x \in [1,3], n = 15$

(4) A program of the Eunler formula (S ++).

```
#include <iostream>
#include <cmath>
using namespace std;
int main ()
{
   float x,y,y0,a,b,h;  int n;
   cin>>y0>>a>>b>>n;
   h=(b-a)/n;
   x=a; y=y0;
   do
   {
       cout<<"x="<<x<<"  y="<<y<<endl;
                  y=y+h*(0.7*y-pow(x,5));
       x=x+h;
   } while (x<b);
   return 0;
}
```

The Runge- Kuta Formula is included in the program, calculating the program to create a program (6)

$$\begin{cases} k_1^{(i)} = hf(x_i, y_i), \\ k_2^{(i)} = hf(x_i + \frac{h}{2}, y_i + \frac{k_1^{(i)}}{2}), \\ k_3^{(i)} = hf(x_i + \frac{h}{2}, y_i + \frac{k_2^{(i)}}{2}), \\ k_4^{(i)} = hf(x_i + h, y_i + k_3^{(i)}). \end{cases}$$

then (5) $y = y + \frac{1}{6}\left[k_1^{(i)} + 2\left(k_2^{(i)} + k_3^{(i)}\right) + k_4^{(i)}\right]$ is calculated.

Instance 1 $\boldsymbol{y' = 0,7y - x^5, y_0 = 1,7, x \in [1,3], n = 15}$

(6) Runge-kutta formula in C++ Program language.

```
#include <iostream>
#include <cmath>
using namespace std;
float f(float t1,float t2)
{      return 0.7*t2-pow(t1,5); }
int main ()
{
        float x,y,y0,a,b,h,k1,k2,k3,k4;  int n;
        cin>>y0>>a>>b>>n;
        h=(b-a)/n;
        x=a; y=y0;
        do
        {
                cout<<"x="<<x<<"
y="<<y<<endl;
k1=h*f(x,y);
k2=h*f(x+h/2,y+k1/2);
k3=h*f(x+h/2,y+k2/2);
k4=h*f(x+h,y+k3);
   y=y+(k1+2*k2+2*k3+k4)/6;
   x=x+h;
        } while (x<b);
        return 0;
}
```

Together with the report, practical, laboratory training is also an important form of training review. In this education, it fulfills the function of the practice with theory.

The internship strengthens the topic, expanding and deepening knowledge, grows knowledge.

Students include the following qualities in the use of "Mental attack", "Table" Table "methods to assess knowledge of modern technologies. Strengthening, deepening programming operators to learn, perception, mastering, and mastering the topics.

From the category table, students teach the answers to finding, analyze them, to draw conclusions themselves from their knowledge they have received themselves.

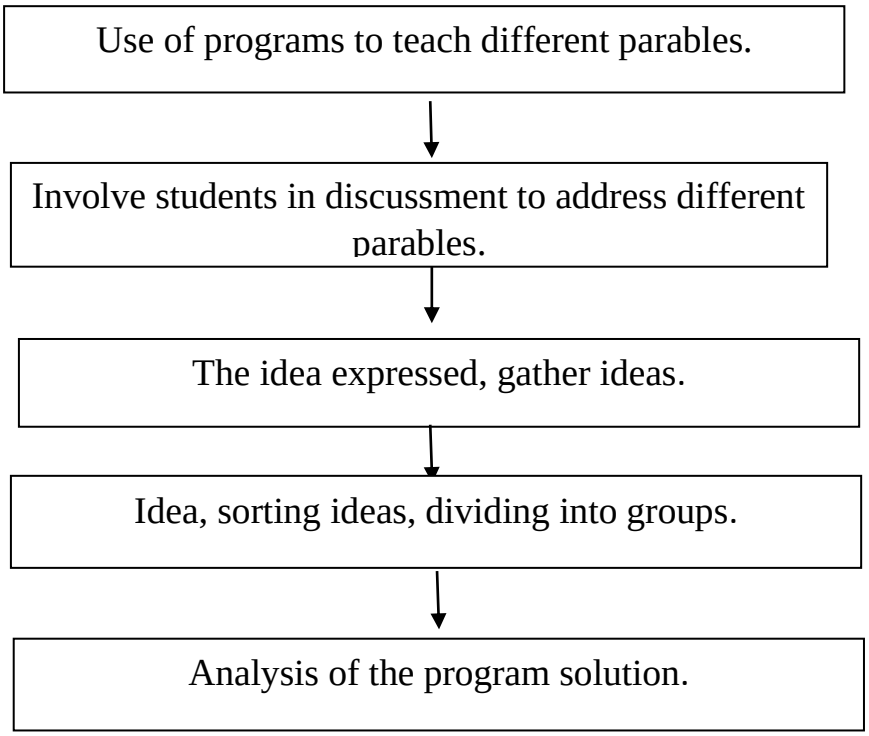
Assess the knowledge of students in the Runge-Tutta method using the Category Method of Category Method

Operator	Operator location	Comment
return	It will be two in the program	Parts for programs and software.
float f(float t1, float t2)	Part is in the program	x,y ни t1,t2 the marking is entered.
h=(b-a)/n	step	In the calculation of a step

The question, the problem, will be discussed with the problem, the problem with the whole group of "mental attacks".

It is a method that guides students in the learning process, including the opinion of different ideas, and expressing their opinions. When using this method, the idea, the question attracts everyone.

It is listened to the feedback of each problem with a certain problem in the meter, based on the feedback. The method of style can be founded through the diagram below.



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