2 calculus individual task:

Solve: ay'' + my' + Ly = kt

For real different roots of the characteristic equation:

Explanation and solution:

n is your student number.

k = n mod 10000.

T = n mod 100.

a = n mod 25.

m = n mod 35.

L = n mod 10.

If the discriminant then the roots of the quadratic equation are real numbers.

In this case the roots of the characteristic equation

are real numbers:

x1

x2

x1 is different from x2.

Code:

n = 15108097

a = n Mod 25

m = n Mod 35

L = n Mod 10

x1 = (-m + Sqr(m ^ 2 - 4 \* a \* L)) / (2 \* a)

x2 = (-m - Sqr(m ^ 2 - 4 \* a \* L)) / (2 \* a)

MsgBox x1

MsgBox x2

Solution:

The general solution of the homogeneous differential equation

ay'' + my' + Ly =0

is

Now you must find any solution of the non-homogeneous differential equation:

ay'' + my' + Ly = kt.

You look for such solution in the form:

p.

Here s and p are the real constants, which will be determined by substituting the expression p into the differential equation ay'' + my' + Ly = kt.

After such substation we will get:

ms+L(st+p)=kt

tLs+ms+Lp = kt

Equation the factors of the corresponding powers of t, we get:

Ls=k

ms+Lp =0

Then

Here are real arbitrary constants.