// Centru parabola

// utilizand Dev-C++5.11 - Console Application

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#include <conio.h>

#include <stdio.h>

#include <math.h>

#include <graphics.h>

int main()

{

float a, b, k, q;

float xp, yp, x, y, xs, ys;

float Sx, Sy;

float Aa, xa, ya; // aria, respectiv coordonatele centrului, calculate analitic

float An = 0, xn, yn; // aria, respectiv coordonatele centrului, calculate numeric

int be = 600, he = 400; // dimensiunile ferestrei grafice, in pixeli

int i,n;

// Citirea datelor de intrare

printf("Baza si inaltimea placii = ");

scanf(" %f %f", &a, &b);

printf("Nr. pasi =");

scanf(" %d", &n);

printf("Factor de scara =");

scanf(" %f", &k);

// Calcul analitic

q = b\*b/a;

Aa = (2/3) \* a \* b;

xa = (3/5) \*a;

ya = (3/8) \*b;

// Calcul numeric si desen

initwindow(be, he);

x = be/2;

y = he/2;

for (i = 0; i < n; i++)

{

xp = i\*a/n;

yp = sqrt(q \* xp);

xs = (i+1) \* a/n;

yp = sqrt(q \* xs);

Aap = (1/2) \* (xs - xp) \* yp;

Aas = (1/2) \* (xs - xp) \* ys;

xnp = (2\*xp + xs)/3;

ynp = yp/3;

xns = (2\*xp + xs)/3;

yns = (yp+ ys)/3;

A = Aa + Aap + Aas;

Soyz = Soyz + Aap \* xnp + Aas \* xns;

Sozx = Sozx + Aap \* ynp + Aas \* yns;

xp = 2;

yp = 1;

xep = x + k\*xp;

yep = y - k\*yp;

xes = xp + k\*xs;

yes = yp - k\*ys;

line(x, y, xs, ys);

line()

}

setcolor(YELLOW);

setlinestyle(SOLID\_LINE , 1, 4);

circle(xs, ys, 4);

// Afisarea rezultatelor

printf("\n");

printf("Analitic: A = %6.3f, xC = %6.3f, yC = %6.3f \n", Aa, xa, ya);

printf("Numeric : A = %6.3f, xC = %6.3f, yC = %6.3f \n", An, xn, yn);

printf("\n");

printf(" Press any key! \n");

while (!kbhit()){};

return 0;

}