

#include <stdio.h>

#include <stdlib.h>

double dfx(double x) {

return 4 \* (x \* x \* x) - 9 \* (x \* x);

}

double abs\_val(double x) {

return x > 0 ? x : -x;

}

double gradient\_descent(double dx, double error, double gamma, unsigned int max\_iters) {

double c\_error = error + 1;

unsigned int iters = 0;

double p\_error;

while (error < c\_error && iters < max\_iters) {

p\_error = dx;

dx -= dfx(p\_error) \* gamma;

c\_error = abs\_val(p\_error - dx);

printf("\nc= %f\n", c\_error);

iters++;

}

return dx;

}

int main() {

double dx = 6;

double error = 1e-6;

double gamma = 0.01;

unsigned int max\_iters = 10000;

printf("The local minimum is: %f\n", gradient\_descent(dx, error, gamma, max\_iters));

return 0;

}

