Computer Assignment # 2

Due: Apr. 16, 2024, 23:59:59

In this assignment you are asked to implement function that can determine if input function(set of points) is

- convex/concave
- quasiconvex/quasiconcave
- superconvex/superconcave (i.e. log-convex, log-concave)

Declare function as
`function [result] = fcn_checker(x,y),`
where `x,y` are input points, and `result` contains answers about properties of given inputs

For example:

```
x = linspace(-1,1,1e3);
y = x.^2;
res = fcn_checker(x,y);
```

Should produce following output to console:

```
convex : yes
concave : no
superconvex : no
superconcave : no
quasiconvex : yes
quasiconcave : no
```

And vector `res` would be a column vector with elements:

```
1
0
0
0
1
0
```

Your function must be able to take matrices as inputs for `x,y` with `result` being a matrix, where each column would correspond to a single function

Please, use file `in_data.mat` that will contain two variables `x,y`. `x(:,1),y(:,1)` corresponds to first function and `x(:,end),y(:,end)` correspond to last. You would not know, what exact form of the function is, only its points. For each of the functions determine convexity properties and write it to report.

You are also given a script `ca02_test.m` with `baseline.mat` to test your function for correctness, you need to PASS all testcases to make sure your functions works. We will also test your function on other data.

Submission Policy

- In MATLAB, write function `fcn_checker` that determines convexity properties. Then write a main file in which you load `in_data.mat` and then call `fcn_checker` .
- Place all your scripts inside the folder called “codes”.
- Place all your answers about convexity of the set inside a report file (pdf or word).

- Put “codes” and report inside zip file called `ca2_xxxxxx.zip`, where `xxxxxx` is your student ID and submit it to e3.