Name and surname:

U number:

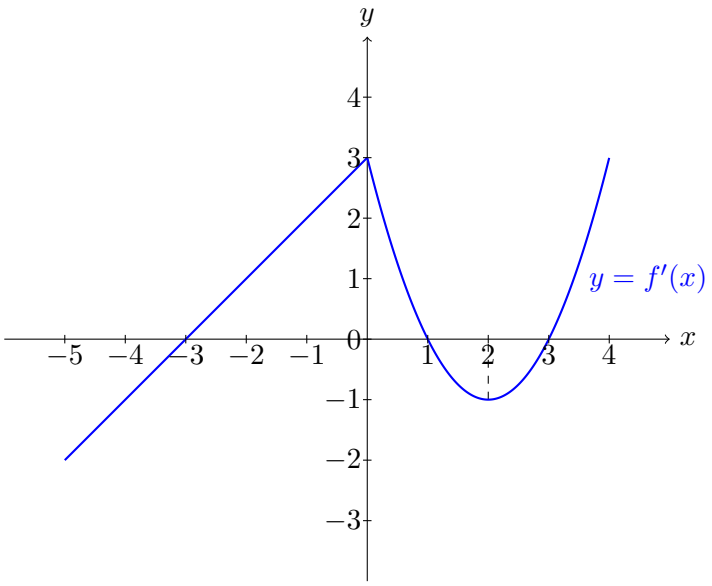
Calculus I - MAC 2311 - Section 001

Quiz 8

04/04/2018

Instructions: The total number of points of this quiz is 11, but your grade will be the minimum between your score and 10. You will get an extra point if you solve correctly the last exercise.

1) The graph of the derivative f' of a function f is shown below.



a) [2 points] What are the critical numbers of f?

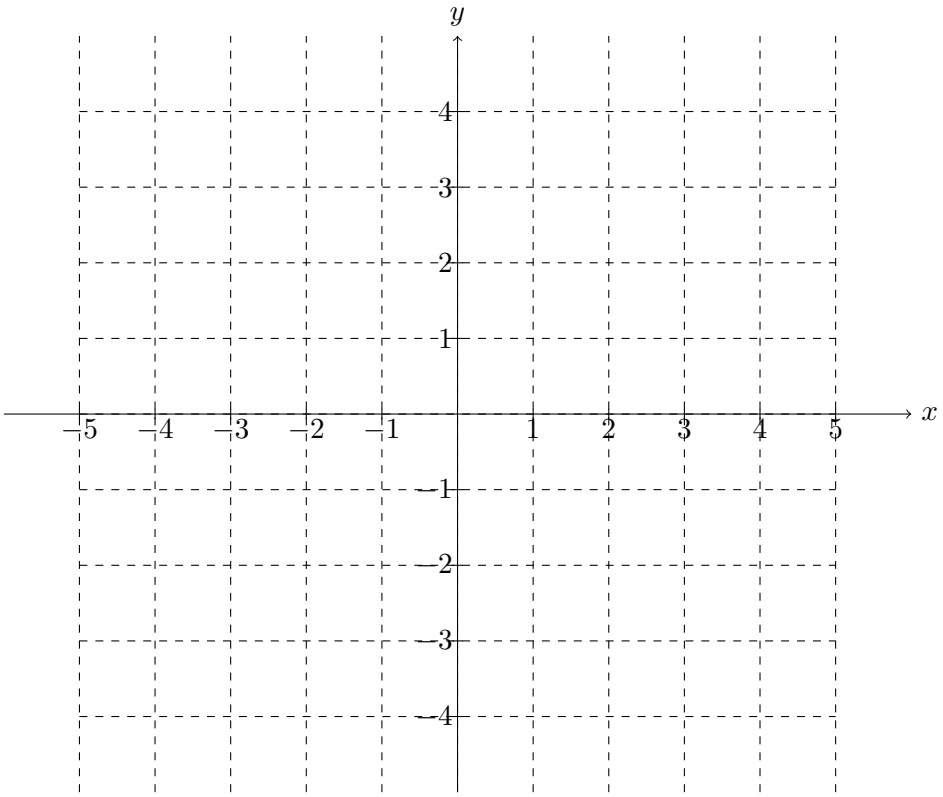
b) [2 points] Over which intervals is the function f increasing/decreasing?

c) [2 points] At what numbers does f have a local minimum/maximum value?

d) [2 points] Over which intervals is f concave down/up?

e) [2 point] What are the x-coordinates of the inflection points?

e) [1 point] Assuming that $f(0) = 0$, sketch a graph of f on the axis provided below.



2) [Bonus] Recall that:

Proposition: If f is a function such that $f'(x) = 0$ for all x in $\mathbb{R}$, then f is a constant function.

Use the previous result to prove that, if f and g are two differentiable functions such that $f'(x) = g'(x)$ for all x in $\mathbb{R}$, then there exists a real number c such that $f(x) = g(x) + c$.