Name and surname:

U number:

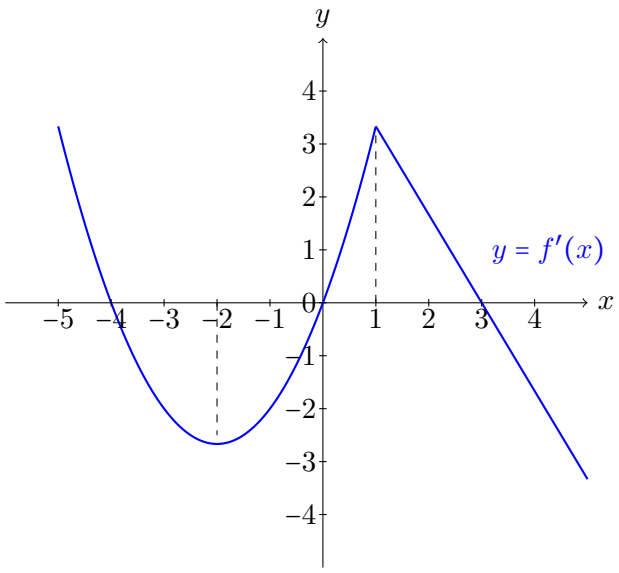
Calculus I - MAC 2311 - Section 003

Quiz 6

10/31/2018

Instructions: The total number of points of this quiz is 10. You will get an extra point if you solve correctly the last exercise.

1) [5 points] The graph of the derivative f' of a function f is shown below.



a) What are the critical numbers of f?

b) Over which intervals is the function f increasing/decreasing?

c) At what numbers does f have a local minimum/maximum value?

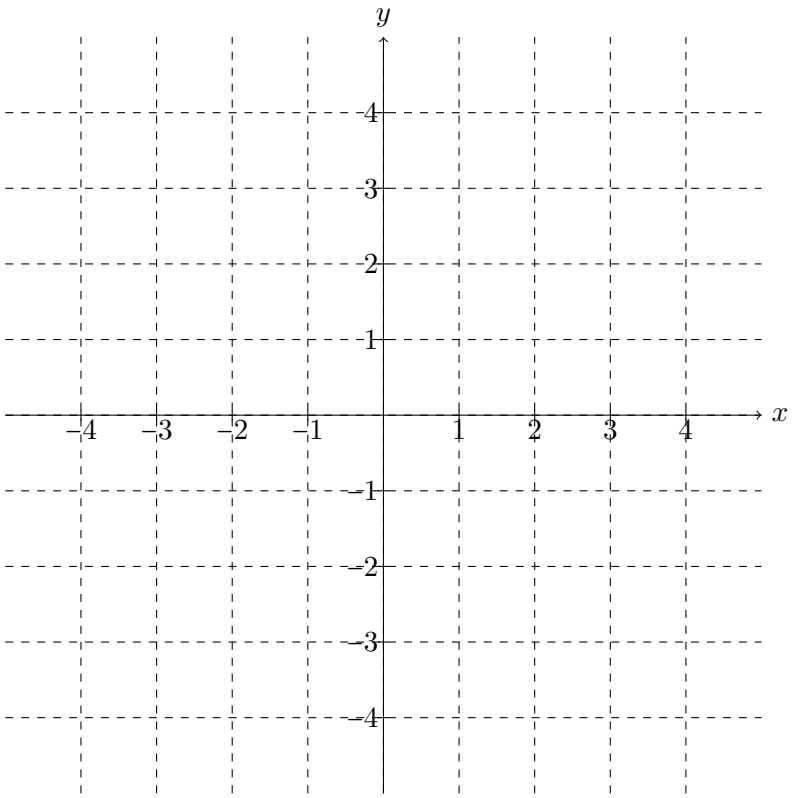
d) Over which intervals is f concave down/up?

e) What are the x-coordinates of the inflection points?

2) [5 points] Sketch the graph of **a** function f that satisfies **all of the given conditions**:

a) f is continuous on $(-\infty, \infty)$;
b) $f(-4) = f(4) = -3$;
c) f has an inflection point at $(-2, 0)$;
d) $f''(x) < 0$ on $(-2, 2)$;
e) $f'(0) = 0$;
f) $f'(x) < 0$ on $(0, \infty)$.

Make sure that your graph is the graph of a function, i.e. it passes the vertical line test.



3) Let f be a function such that $f'(x_0) = 0$ and $f''(x) > 0$ near x_0. Show that f has a local minimum at x_0.