MATH 190, QUIZ 3

Oct 22, 2018
Time: 15 minutes

Show all your work. No calculators, no books/notes are allowed.

Name (please print): _____

Student number: _____

1. Questions (a)-(e) below all concern the function

$$f(x) = \frac{1}{2x}.$$

(a) [4 points] Use the definition of the derivative (and not any other method) to find $f'(2)$.

(b) [4 points] Use derivative rule(s) to find $f'(2)$.

(c) [3 points] Find the equation of the tangent line to the graph of $f(x)$ at $x = 2$.

(d) [2 points] Which option describes the graph of f correctly? Give reasons for your choice.

i. Always increasing

ii. Always decreasing

iii. Increasing on $(0, \infty)$ and decreasing on $(-\infty, 0)$

iv. Decreasing on $(0, \infty)$ and increasing on $(-\infty, 0)$

(e) **(Bonus)** [2 points] Sketch a rough graph of f and its tangent line at $x = 2$.