AP Calculus AB
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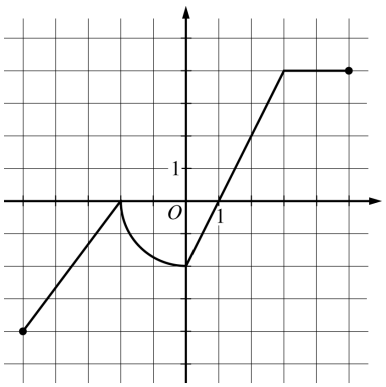
Mock Exam 0429 Problem 2
Friday, May 1, 2020

Problem 2. The graph of the function f, consisting of three line segments and a quarter of a circle, is shown below.



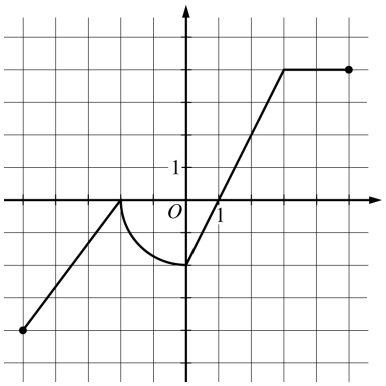
Graph of f

Let g be the function defined by $g(x) = \int_1^x f(t)\,dt$.

(a) Find the average rate of change of g from $x = -5$ to $x = 5$.

(b) Find the instantaneous rate of change of g with respect to x at $x = 3$, or state that it does not exist.

Problem 2. The graph of the function f, consisting of three line segments and a quarter of a circle, is shown below.



Graph of f

Let g be the function defined by $g(x) = \int_1^x f(t)\,dt$.

(c) On what open intervals, if any, is the graph of g concave up? Justify your answer.

(d) Find all x-values in the interval $-5 < x < 5$ at which g has a critical point. Classify each critical point as the location of a local minimum, local maximum, or neither. Justify your answers.