

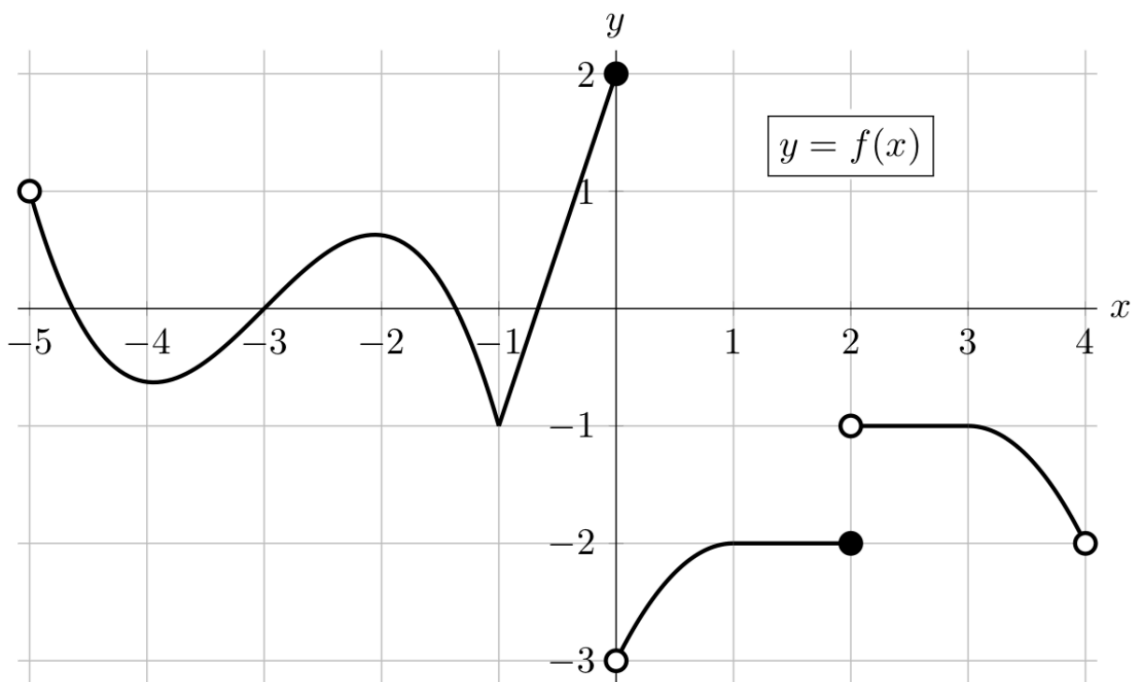
## Worksheet 13

## Warm-up questions

What does it mean for a function to be differentiable?

Give an example of function that is not differentiable at a point.

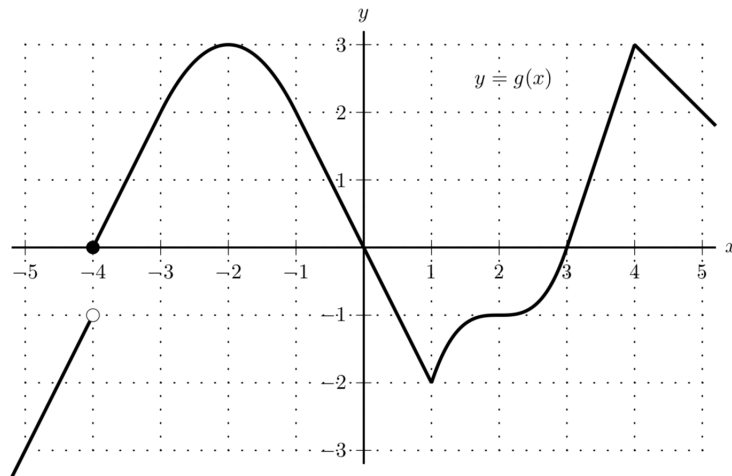
**Problem 1** (Fall 2016 Exam 2 Problem 4). The graph of a function  $f$  is shown below.



Sketch a graph of  $f'(x)$  (the derivative of the function  $f(x)$ ) on the interval  $-5 < x < 4$ . Be sure that you pay close attention to each of the following:

- Where  $f'$  is defined.
- The value of  $f'(x)$  near each of  $x = -5, -4, -3, -2, -1, 0, 1, 2, 3, 4$ .
- The sign of  $f'$ .
- Where  $f'$  is increasing/decreasing/constant.

**Problem 2** (Winter 2014 Exam 2 problem 6). The graph of a function  $g$  is shown below.



Sketch the graph of  $y = g'(x)$ . Be sure that you pay close attention to each of the following:

- Where  $g'$  is defined.
- the value of  $g'(x)$  near each of  $x = -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5$
- The sign of  $g'$ .
- Where  $g'$  is increasing/decreasing/constant.