

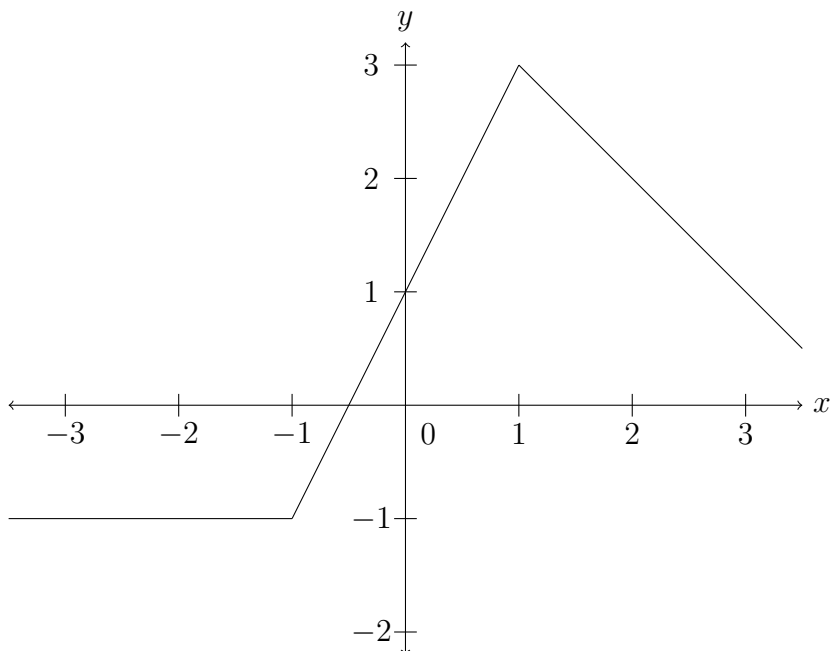
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# The Derivative as a Function

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Solutions should show all of your work, not just a single final answer.

1. The graph of  $y = f(x)$  is pictured below.



- (a) Compute each derivative below, explaining your calculations. If a derivative does not exist, write DNE.
- |              |               |               |
|--------------|---------------|---------------|
| (i) $f'(-2)$ | (ii) $f'(-1)$ | (iii) $f'(0)$ |
| (iv) $f'(1)$ | (v) $f'(2)$   | (vi) $f'(3)$  |
- (b) Sketch a graph of the derivative  $f'(x)$ , leaving blank spots where it does not exist.
2. Find the derivative of  $f(x) = \frac{8}{x^2}$  using the limit definition of the derivative (**no credit for using any other method**). Hint: Look at 4b on Worksheet 2.3.
3. T/F (with justification) A function that is continuous at  $a$  is also differentiable at  $a$ .
4. T/F (with justification) If  $f'(2)$  exists, then  $\lim_{x \rightarrow 2} f(x) = f(2)$ .