

Explorations and Activities ER

►. Let

$$f(x) = e^{2x}.$$

As usual, $f^{(n)}$ denotes the n^{th} derivative of the function f .

1. Directly in the below provided chart, indicate the first eight derivatives of this function f .

Hint. Since we will be looking for a pattern, you may should express, e.g., 8 as 2^3 .

Hint. For LaTeX help, the the first one is done for you. Note the curly brackets in the LaTeX-ing of e^{2x} .

2. Formulate a conjecture that appears to be true for the n^{th} derivative of f . The conjecture should be written as a conditional statement and contain (both) the words *if* and *then*. E.g., it could start off as: “If n is a natural number”

Hint: **Definition.** A conjecture is a statement that we believe is plausible. That is, we think it is true, but we have not (yet) formulated a proof to show that it is indeed true.

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- 1.

n	$f^{(n)}(x)$
1	$2e^{2x}$
2	
3	
4	
5	
6	
7	
8	

- 2.

DELETE this whole sentence and THEN put your answer to part 2 down here.