

Explorations and Activities Exercise

Def. A conjecture is a statement that we believe is plausible (but we do not have a proof for it . . . yet).

►. Let

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

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

1. Using a chart, indicate the first eight derivatives of this function f . (See below.)
2. Formulate a conjecture that appears to be true for the n^{th} derivative of f for when $n \in \mathbb{N}$.

Your conjecture should be a conditional statement and contain (both) the words *if* and *then*.

E.g., your conjecture could start off as: “If $f(x) = e^{2x}$ and”

.....

Solution

1.

n	$f^{(n)}(x)$
1	$2e^{2x} \stackrel{\text{also}}{=} 2^1 e^{2x}$ <small>ok</small>
2	
3	
4	
5	
6	
7	
8	

2.