

question	2 views
<p>Daily Challenge 18.6 (Due: Saturday 11/17 at 12:00 noon Eastern)</p> <p>We continue with the week of exercises rather than challenges.</p> <hr/> <p>(1) Exercise: more antiderivatives.</p> <hr/> <p>Suppose that F_1 and F_2 are two antiderivatives of f; that is, $F_1'(x) = f(x) = F_2'(x)$. How are F_1 and F_2 related? Must they be equal?</p> <p>daily_challenge</p>	
Updated 5 months ago by Christian Ferko	
<p>the students' answer, <i>where students collectively construct a single answer</i></p> <p>They both (F_1 and F_2) have derivatives equal to f, but we see in the step back back that we gain an unknown constant for each, C_1 and C_2. Intuitively it need not be true that these constants have the same value, as all constants have the derivative 0 that we observe in f. "They differ by some constant C" as cybirschool words it.</p>	
Updated 4 months ago by Logan Pachulski	
<p>the instructors' answer, <i>where instructors collectively construct a single answer</i></p> <p>If $F_1'(x) = f(x) = F_2'(x)$, then by linearity the derivative $\frac{d}{dx}(F_1(x) - F_2(x)) = 0$. But if the derivative of the quantity in parentheses vanishes, that quantity must be equal to a constant C. Thus $F_1(x) = F_2(x) + C$ and the two functions differ by a constant.</p>	
Updated 4 months ago by Christian Ferko	
<p>followup discussions <i>for lingering questions and comments</i></p>	