question 2 views

Daily Challenge 18.4

(**Due: Thursday 11/15 at 12:00 noon Eastern**)

We continue with the week of exercises rather than challenges.

(1) Exercise: an antiderivative.

The symbol $\int f(x)\,dx$, with no limits of integration a and b, means to find an *antiderivative* of $f(x)$. That is, this symbol means to find a function $F(x)$ such that $F'(x) = f(x)$. For instance,

$$\int x^3\,dx = \frac{1}{4}x^4 + C,$$

where it is common to write "$+C$" to remind the reader that we may add any constant to an anti-derivative, since constants differentiate to zero.

This is also sometimes called an *indefinite integral*, in contrast to a *definite integral*, which has endpoints and therefore gives an actual number (an area) rather than a function.

Find the anti-derivative $\int \left(3x^2 - 7x + 2\right)\,dx$

daily_challenge

Updated 5 months ago by Christian Ferko

the students' answer, *where students collectively construct a single answer*

Fairly simple, $x^3 - \frac{7x^2}{2} + 2x$ plus some constant C.

Updated 4 months ago by Logan Pachulski

the instructors' answer, *where instructors collectively construct a single answer*

The antiderivative is

$$\int \left(3x^2 - 7x + 2\right)\,dx = x^3 - \frac{7}{2}x^2 + 2x + C.$$

Updated 4 months ago by Christian Ferko

followup discussions *for lingering questions and comments*