question 2 views

Daily Challenge 18.7

(**Due: Sunday 11/18 at 12:00 noon Eastern**)

We continue with the week of exercises rather than challenges.

(1) Exercise: more antiderivative practice.

Try to find anti-derivatives of the three functions

$f(x) = e^{3x},$
$g(x) = \sin\left(\frac{x}{2}\right),$
$h(x) = \cos(-5x).$

You might have to multiply or divide by some numerical factors to get them to work out.

daily_challenge

Updated 5 months ago by Christian Ferko

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

Through ~~intuition~~ various applications of the chain rule:
a: $e^{3x} \cdot \frac{1}{3}$
b: $-\cos(\frac{x}{2}) \cdot 2$
c: $\sin(-5x) \cdot \frac{-1}{5}$

~~I believe that trying to provide work for this is like trying to provide work for addition... not to insult the problem but to explain the workless results.~~
Old self had better shut up.

Updated 3 months ago by Logan Pachulski

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

By inspection, we choose the three antiderivatives

$$F(x) = \frac{1}{3}e^{3x} + C$$
$$G(x) = -2\cos\left(\frac{x}{2}\right) + C$$
$$H(x) = -\frac{1}{5}\sin(-5x) + C.$$

Then $F' = f, G' = g, H' = h$ as desired.

Updated 4 months ago by Christian Ferko

followup discussions *for lingering questions and comments*