Mini-math AP Calculus BC: Friday, January 28, 2022 (6 minutes)

1. (1 point) Find $\displaystyle\int_0^2 x^2 e^x \, dx$

   A. $\dfrac{8}{3}e^2$ B. $-2e^2 - 2$ C. $2e^2 - 2$ D. $3e^2 - 1$

2. (1 point) Find $\displaystyle\int \dfrac{x-2}{x^3 + 3x^2 + 2x} \, dx$

   A. $\dfrac{\frac{1}{2}x^2 - 2x}{\frac{1}{4}x^4 + x^3 + x^2} + C$

   B. $\ln|x| - 3\ln|x+1| + 2\ln|x+2| + C$

   C. $-\ln|x| + \dfrac{1}{3}\ln|x+1| + \dfrac{1}{2}\ln|x+2| + C$

   D. $\ln\left|\dfrac{(x+1)^3}{x(x+2)^2}\right| + C$

3. (1 point) Find $\displaystyle\int_0^9 \frac{dx}{\sqrt{9-x}}$

    A. -6

    B. 3

    C. 6

    D. Does not exist because the $\dfrac{1}{\sqrt{9-x}}$ is discontinuous on the interval