Problem Set #8

Due Friday, November 15, 2024 @ 12:30 pm
Submit as single pdf file to Canvas

Remember that you need to explain and show the steps in your answers!

1. Evaluate the following definite integrals.

   (a) $\displaystyle\int_{-1}^{3} -x^2 + x - 2 + 3\sin(x)\ dx$

   (b) $\displaystyle\int_{-1.3}^{1.3} \sin(x^3)\ dx$

2. Let $G(x) = \displaystyle\int_{7}^{\cos(x)^2} (t+1)^{14}\ dt$

   Use the Fundamental Theorem of Calculus to find $G'(x)$

3. (a) Evaluate the integral $\displaystyle\int f(x)\ dx = \int \cos(x)\sqrt{\sin(x)+3}\ dx$

   (b) Graph your antiderivative $F(x)$and the integrand $f(x)$ on the same set of axes to verify that your antiderivative is correct. Include a copy of your graph, either as a sketch or by exporting from Desmos or another graphing utility.

   (c) Also verify that your antiderivative $F(x)$ is correct by taking its derivative and comparing to $f(x)$.

   General tip: It's a good habit to always do parts (b) & (c) to verify that your antiderivative is correct!