Quiz 0   MAC 2313 - Spring 2022

To receive credit you MUST SHOW ALL YOUR WORK.

1. (10 pts) Find the derivative of each of the following functions:

(a) $f(x) = \dfrac{2x^2 + 3}{\sqrt{x}}$

(b) $g(x) = e^x \ln(3x+2) + (\sin x)^3$

2. (10 pts) Find each anti-derivative:

(a) $\displaystyle \int \left(\frac{1}{x} + \frac{1}{1+x^2} \right) dx$

(b) $\displaystyle \int \sin^3 x \cos x \, dx$

3. (10 pts) Let $f(x) = x^2 - 5x$ on the interval $[1, 3]$. Find the critical points and the extreme values of f (absolute min and absolute max of f on $[1, 3]$, if they exist).

4. (5 pts) Solve the system

$$\begin{cases} 3x + 4y & = 2 \\ x + y & = 1 \end{cases}$$