Math 105, Section 208, Quiz 2 End of week 3 Grade:

First Name: _____ Last Name: _____

Student-No: _____ **Justify all answers unless otherwise directed.**

1. Find the absolute maximum and minimum values of $f(x, y) = e^{xy}$ given the constraint $g(x, y) = 2x^2 + y^2 = 1$. [4]

2. Find the absolute maximum and minimum values of $f(x, y) = e^{xy}$ over the elliptical region $2x^2 + y^2 \leq 1$. [2]
   You may use your work from in the last question.
   Remember to justify your answer, as always.

3. Find and classify all critical points of $f(x, y) = x^4 + 2y^2 + 4xy$. 4

4. Which of the previous questions did you get **completely right**? 2 (bonus)
   Fill in the appropriate box(es).

   1 2 3

   ☐ I didn't get any of the questions completely right.