

First midterm test – make up, 22<sup>nd</sup> March 2024

Name: \_\_\_\_\_

Points: /25

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1. Find the maximum and the minimum of

$$f(x, y) = 2x^2 + y^2 - 2xy$$

on a rectangle

$$M = \{(x, y) \in \mathbb{R}^2, -1 \leq x \leq 1, -1 \leq y \leq 1\}.$$

Points: /12

2. Find the maximum and the minimum of  $f(x, y) = x + y^2$  subjected to the constraint

$$x^2 + 4y^2 = 4.$$

Points: /8

3. Compute

$$\int \frac{6x + 6}{2x + 1} dx.$$

Points: /5