QUIZ 6 FOR MATH 2401 BUNIMOVICH

NO CALCULATORS, NOTES, OR BOOKS ALLOWED. SHOW ALL YOUR WORK.

Name: Solution
TA:

1) Calculate the average value of \( f(x, y) = 2x + y \) on the rectangle \( R = \{(x, y) : 0 \leq x \leq 1, 0 \leq y \leq 2\} \). (15 pts.)

\[
\iint_R f(x, y) \, dx \, dy = \left( \frac{\text{Average Value of } f}{\text{Area of } R} \right) \times \left( \text{Area of } R \right)
\]

\[
\int_{x=0}^{1} \int_{y=0}^{2} (2x + y) \, dx \, dy = \int_{x=0}^{1} \left[ x^2 + xy \right]_{y=0}^{2} \, dx = \int_{x=0}^{1} (4x + 2) \, dx
\]

\[
= 2x^2 + 2x \bigg|_0^1 = 4
\]

Area of \( R \) = 2

So the Average Value = \( \frac{4}{2} = \boxed{2} \)