

Quiz #7

Monday, April 16 2018

Duration: 20 min

NAME: _____

Please write clearly and properly.

Explain your answers appropriately.

Problem	Grade
1	
2	
Total	

Problem 1 (~ 7 points.). Consider the function f of two variables defined by:

$$f(x, y) = 1 - 2xy^2$$

and the rectangle R defined by:

$$\begin{aligned} R &= [-1, 3] \times [-1, 2] \\ &= \{(x, y) \in \mathbb{R}^2 : -1 \leq x \leq 3, -1 \leq y \leq 2\} . \end{aligned}$$

(1) Does the domain of definition of the function f contain the rectangle R ?

(2) Draw a quick sketch of the rectangle R in the xy -plane.

(3) Compute the integral of f over the rectangle R in two different ways.

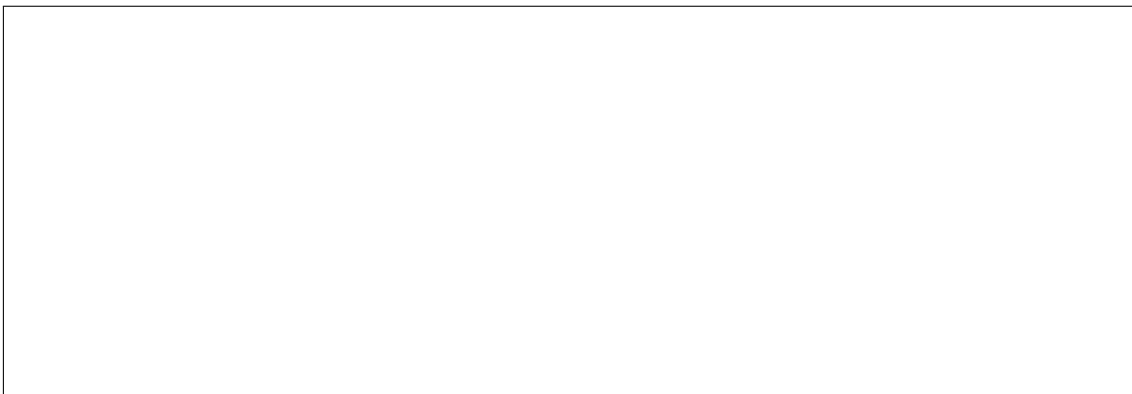


You may continue writing your solution on the next page.

You may continue writing your solution here.



(4) What is the average value of f over the rectangle R ?



Problem 2 (~ 3 points.). Find the value of the double integral:

$$\iint_R \cos(x + y) \, dx \, dy \quad \text{where } R = \left[0, \frac{\pi}{2}\right] \times \left[0, \frac{\pi}{2}\right]$$

Remark: Recall that $\cos(0) = 1$, $\cos(\pi/2) = 0$ and $\cos(\pi) = -1$.