Name: _____ Math 234 Quiz 10

Section: 328 □ 329 □ Dec 4, 2014

1. Let $\mathcal{C}$ be the counter-clockwise traversed boundary of the region $\mathcal{R}$. Compute the indicated line integral using Green's theorem.

(a) (10 pts) $\oint_{\mathcal{C}} \overrightarrow{\mathbf{F}} \cdot \overrightarrow{\mathbf{N}} ds,\ \mathcal{R} : x^2 + y^2 \leq 4$ and $y \geq 0$

where $\overrightarrow{\mathbf{F}} = (xy^2, x^2y)$ and $\overrightarrow{\mathbf{N}}$ is the outward normal.

(b) (10 pts) $\oint_{\mathcal{C}} (x - y)dx + (x + y)dy,\ \mathcal{R} : 0 \leq x \leq 1, 0 \leq y \leq x^2.$

Bonus. (5 pts) Compute the integral in **1**(b) without using Green's theorem.