Name:_____

M344: Calculus III (Su.19)
Good Problems 4
Sections 15.1, 15.2, 15.9

WICHITA STATE UNIVERSITY

Instructions. Complete all problems on this paper. You may use any resources that you'd like, but be sure to show enough work.

1. [15 points] Compute $\iint_R 2(x+1)y^2\,dA$, $R = [0,1] \times [0,3]$, by Riemann sum definition. You must use the Riemann sum definition to receive credit.

2–4. [10 points each] Compute the double integrals. Show enough work.

2. $\displaystyle\int_1^4 \int_1^2 \left(\frac{x}{y} + \frac{y}{x}\right) dy\, dx$

3. $\displaystyle\iint_R \frac{xy^2}{x^2+1}\, dA, \quad R = [0,1] \times [-3,3]$

4. $\displaystyle\iint_R x \sin(x+y)\, dA, \quad R = [0,\pi/6] \times [0,\pi/3]$

5. [15 points] Evaluate the double integral

$$\iint_D x \cos y \, dA,$$

where D is bounded by $y = 0$, $y = x^2$, and $x = 1$.

6. [15 points] Evaluate the integral by (carefully!) reversing the order of integration.

$$\int_0^1 \int_{\arcsin y}^{\frac{\pi}{2}} \cos x \sqrt{1 + \cos^2 x} \, dx dy$$

7. [25 points] Evaluate the integral by making an appropriate change of variables.

$$\iint_R \frac{x-2y}{3x-y}\,dA,$$

where R is the parallelogram enclosed by the lines $x-2y=0$, $x-2y=4$, $3x-y=1$, and $3x-y=8$.

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