Name: _____ Sort #: _____

Worksheet 13

Double Integrals MATH 2210, Fall 2018

1. Circle True (T) or False (F). If a statement is true explain why; if false explain why or give a counterexample.

   (a) **T** **F** The double integral

$$\int_0^2 \int_0^2 [f(x) + g(y)]\, dx\, dy = \int_0^2 f(x)\, dx \int_0^2 g(y)\, dy$$

   (b) **T** **F** The double integral

$$\int_0^4 \int_0^4 f(x) f(y)\, dx\, dy = \left(\int_0^4 f(x)\, dx \right)^2$$

   (c) **T** **F** If the double integral $\iint_R f(x, y)\, dA = 0$ then $f(x, y) = 0$ at every point in R.

2. Evaluate the integral

$$\iint_R 12y \, \mathrm{d}A$$

where R is the region bounded by $y = 2 - x$, $y = \sqrt{x}$ and $y = 0$.

3. Let $R = \{(x, y) : 0 \leq x \leq \pi, 0 \leq y \leq a\}$. For what values of a, with $0 \leq a \leq \pi$ will

$$\iint_R \sin(x + y)\ \mathrm{d}A = 1?$$

4. Match each iterated integral with its region of integration. Place the appropriate letter (A, B, C, or D) in the box next to the appropriate graph.

A. $\displaystyle\int_0^{\sqrt{2}/2}\int_y^{\sqrt{1-y^2}} x^2y\,dx\,dy$

C. $\displaystyle\int_0^1\int_{y/2}^{(2-y)/2} \sqrt{1-x^2}\,dx\,dy$

B. $\displaystyle\int_0^1\int_{x/2}^{(1+x)/2} (x^2+y^2)\,dy\,dx$

D. $\displaystyle\int_0^{\sqrt{2}/2}\int_x^{\sqrt{1-x^2}} x\,dy\,dx$