

# TMATH 126: Quiz 5

You may use any work of yours that you made from last week. This includes, practice problems from the book and worked out WebAssign problems. This *does not* include photocopies of notes from the book or tutorials shown on WebAssign. You may also use a calculator, but you are not allowed to use any device that can access the internet.

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work.

1. [6] TRUE/FALSE: Circle T in each of the following cases if the statement is *always* true and provide a brief justification. Otherwise, circle F and provide either counterexample or reasoning for your answer.

T   F   Riemann sums have nothing to do with double integrals.

T   F    $\int_0^2 \int_1^3 (20x^3 - 36x^2y^2) dy dx = \int_1^3 \int_0^2 (20x^3 - 36x^2y^2) dx dy.$

T   F    $\int_{-2}^0 \int_x^{\sqrt{x+2}} (20x^3 - 36x^2y^2) dy dx = \int_x^{\sqrt{x+2}} \int_{-2}^0 (20x^3 - 36x^2y^2) dx dy.$

2. [4] Calculate the double integral:  $\iint_R 2 \cos(x + 2y) dA$  over the region  
 $R = \{(x, y) | 0 \leq x \leq 3\pi, 0 \leq y \leq \frac{\pi}{2}\}$

3. [3] Reverse the order of integration in the following *but do not integrate*

$$\int_0^{16} \int_{\sqrt{x}}^4 \frac{5}{y^3 + 1} dy dx$$

4. [7] Find the signed volume of the solid under the surface  $z = 6xy$  and above the triangle with vertices  $(1, 1)$ ,  $(3, 1)$ , and  $(1, 5)$ .