234 Quiz 9

Section: *Name:*

20 minutes. The extra two points are bonus.

1. (a)(3) Mark true or false for the following(No need to explain):

   - $\int_a^b \int_c^d f(x,y)dxdy = \int_c^d \int_a^b f(x,y)dydx$
   - $\int_0^1 \int_{x^2}^x f(x,y)dydx = \int_{x^2}^x \int_0^1 f(x,y)dxdy$
   - $\int_0^{100} \int_0^{100} f(x)f(y)dxdy = \left(\int_0^{100} f(x)dx\right)^2$

   (b)(4) Let $D = \{(x,y) : 0 \leq y \leq 1, y^2 \leq x \leq 1\}$. Compute the volume under the graph of the function $f(x,y) = y\sin(x^2)$ and above D.

2. (5) Set up the integral in polar coordinates without solving:

   The volume under $f(x,y) = x^2$ *and above the region* $D = \{(x,y) : x^2 + y^2 \geq 4, x^2 + (y-2)^2 \leq 4\}$