

Quiz 4 -Review Quiz. NAME:

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Required: Circle two (or fewer) problems that you want graded.

Quiz 1-1      Quiz 1-2      Quiz 2-1      Quiz 2-2      Quiz 3-1      Quiz 3-2

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**Quiz 1 Question 1**

Evaluate the double integral  $\int \int_D x dA$ , where  $D$  is the triangular region with vertices  $(-3, 0)$ ,  $(6, 0)$ ,  $(0, 3)$ .

**Quiz 1 Question 2**

Using polar coordinates, write an iterated integral that will compute the volume of the region enclosed by the surface  $z^2 - 4x^2 - 4y^2 = 20$  and the plane  $z = 6$ .

*DO NOT EVALUATE THE INTEGRAL! Just set it up completely, with limits and the integrand in polar coordinates ready to be evaluated!*

**Quiz 2 Question 1**

**Set up completely this integral in CYLINDRICAL COORDINATES but *DO NOT EVALUATE*.**

Set up  $\int \int \int_D xz dV$ , where  $D$  is the part of the solid consisting of points inside the sphere  $x^2 + y^2 + z^2 = 9$  and outside the cylinder  $x^2 + y^2 = 1$  that is contained in the first octant.

(To repeat, take this solid bounded by the sphere and the cylinder but integrate only over the part of the solid in the first octant, i.e., where  $x, y, z$  are all nonnegative.)

**Quiz 2 Question 2**

**Set up completely this integral in CARTESIAN COORDINATES (i.e.,  $x, y, z$  coordinates) but *DO NOT EVALUATE*.**

Set up the integral  $\int \int \int_S x^2 y^2 dV$ , where  $S$  is the solid bounded by the planes given by these equations:  
 $z = 0, \quad y = 0, \quad 2x + 2y + z = 2, \quad -2x + 2y + z = 2.$

**Quiz 3 Question 1**

Let  $D$  be the set of  $(x, y)$  given by  $4(x - y)^2 + (x + y)^2 \leq 4$ .

Transform the integral  $\int \int_D (x - y)^2 dx dy$  into an integral in  $u$  and  $v$  using the change of variables

$$u = 2(x - y), \quad v = x + y$$

**Hint:** Look carefully at the relationship between  $u$  and  $v$  and the definition of  $D$ .

Draw a box around this integral. Then evaluate the new integral by any method you choose.

**Quiz 3 Question 2**

Describe clearly the image of the rectangle given by  $0 \leq s \leq 1$  and  $0 \leq t \leq 1$  under the transformation  $x = -t$ ,  $y = 2s + 2t$ .