

## Math 5C Test 3 v2 – Fall 2022

**Follow Instructions given on Canvas.**

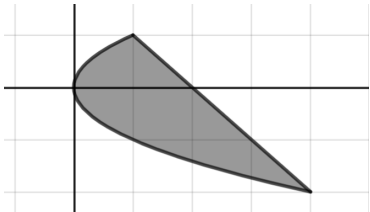
(1) Evaluate  $\int_0^{\pi/2} \int_0^{\sqrt{x}} \int_0^{\sin x} \sqrt{x} \, dz \, dy \, dx$

(7points)

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(2) Evaluate  $\iint_D y \, dA$  where D is the region bounded by  $x=y^2$  and  $y = 2 - x$ .

(10 points)



(3) Evaluate  $\int_0^4 \int_{\sqrt{x}}^2 \frac{1}{y^3 + 4} dy dx$  You may want to reverse the order of integration.

(11 points)

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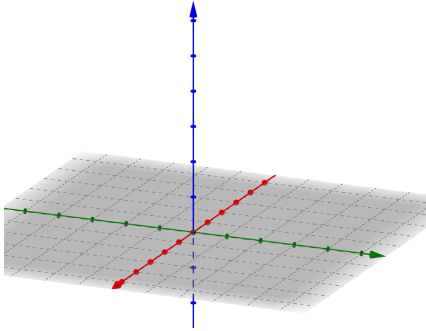
(4) Evaluate  $\int_C xy^2 ds$  where C is the line segment from (-3,0,1) to (4, 2, 5). (11 points)

(5) SET UP BUT DO NOT EVALUATE: integrals as specified to find the volume enclosed

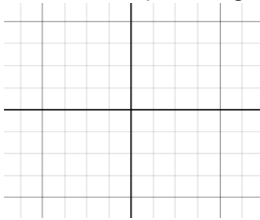
above the cone  $z = \sqrt{\frac{1}{3}(x^2 + y^2)}$  and inside the sphere  $x^2 + y^2 + z^2 = 4$  in the first octant. In each part, sketch the necessary projection

(24points)

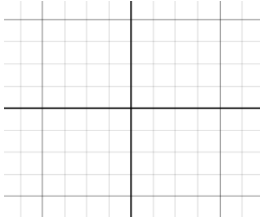
a) Sketch the solid



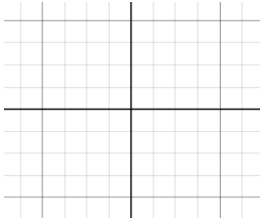
b) Triple integral - cylindrical coordinates.



c) Triple integral - spherical coordinates.



d) Triple Integral - order dx dz dy



e) Double integral- order dydx

(6) Evaluate  $\iint_S xz \, dS$  where S is the portion plane  $2x+2y+z=6$  in the first octant.

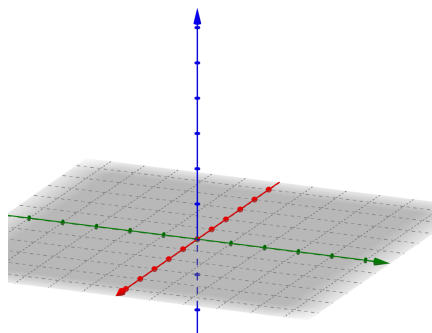
(11 points)

(7) Check all the boxes that apply. A function of three variables might appear in which of the following types of integrals? (6 points)

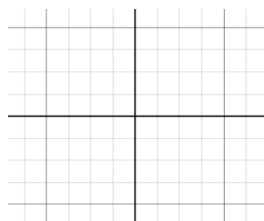
<input type="checkbox"/>	Single Integral
<input type="checkbox"/>	Double Integral
<input type="checkbox"/>	Triple Integral
<input type="checkbox"/>	Line Integral
<input type="checkbox"/>	Surface Integral.

(8) SET UP ONLY :Find the volume of the solid bounded by the surface  $z=x^2$  and the planes  $y=0$ ,  $y=1$ , and  $z=9$  according to the following directions. (sketch the solid). In each part, sketch the necessary projection

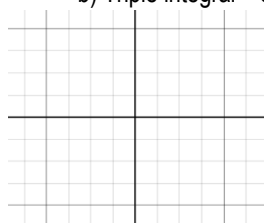
(20 points)



a) Triple integral – order  $dz dx dy$



b) Triple integral – order  $dy dx dz$



c) Triple integral – order  $dx dy dz$

