

Directions: Do not simplify, evaluate or integrate unless indicated. No calculators are permitted. Show all work as appropriate for the methods taught in this course. Partial credit will be given for any work, words, pictures or ideas which are relevant to the problem.

Please put problem 1 on answer sheet 1

1. (a) Reparametrize the following integral as vertically simple and then evaluate. [15 pts]
This is the only integral you need to evaluate.

$$\int_0^4 \int_{\frac{1}{2}y}^{\sqrt{y}} x \, dx \, dy$$

- (b) Parametrize the part of the cylinder $x^2 + z^2 = 9$ between $y = 0$ and $y = 5$. [5 pts]

Please put problem 2 on answer sheet 2

2. (a) Let R be the region between the functions $y = x^2$ and $y = 8 - x^2$. Set up the iterated double integral in rectangular coordinates for $\iint_R y \, dA$. [8 pts]
Do not evaluate.
- (b) Let R be the region inside the circle $r = 4$ and to the right of the line $x = 2$. Set up the iterated double integral in polar coordinates for $\iint_R y \, dA$. [12 pts]
Do not evaluate.

Please put problem 3 on answer sheet 3

3. Let D be the solid inside the cylinder $(x-2)^2 + y^2 = 4$ and between the planes $z = 1$ and $z = 7+x$. [20 pts]
 Write down the iterated triple integral in cylindrical coordinates for the volume of D .
Do not evaluate.

Please put problem 4 on answer sheet 4

4. Let D be the solid outside the cylinder $x^2 + y^2 = 4$ and inside the sphere $x^2 + y^2 + z^2 = 16$. If the mass of D at a point is given by the function $f(x, y, z) = x^2 z^2$, write down the iterated triple integral in spherical coordinates for the mass of D . [20 pts]
Do not evaluate.

Please put problem 5 on answer sheet 5

5. Let R be the region in the first quadrant bounded by the lines $y = x$, $y = 3x$, $y = \frac{1}{x}$ and $y = \frac{5}{x}$. [20 pts]
 Perform a change of variables to rewrite $\iint_R xy \, dA$ as an iterated integral over a rectangle in the uv -plane.
Do not evaluate.

The End and the TA Section List

Kevin	0111 ↔ 8:00	0121 ↔ 9:30
Noah	0112 ↔ 8:00	0122 ↔ 9:30
Nathaniel	0131 ↔ 12:30	0141 ↔ 2:00
Tessa	0132 ↔ 12:30	0142 ↔ 2:00