

Double Integrals Worksheet

1. Reverse the order of integration in the following double integral:

$$\int_0^1 \int_0^{-x+2} f(x, y) dy dx$$

2. Evaluate the double integral $\iint_A y dx dy$ where A is the area bounded by $x = y^2$ and $x = y^{1/2}$.

3. Evaluate the double integral $\iint_B y dy dx$ where B is the area bounded by $x = 1$, $x = 2$, $x = y^2$, and $x = y^{1/2}$.

4. What is the volume under the graph of $f(x, y) = y$ over the area bounded by $x = 0$, $x = y^2$, and $x = y^{1/2}$?

Double Integrals - Teaching notes

- First, do reverse order of integration.

$$\int_0^2 \int_0^{2-x} f(x, y) dy dx$$

Show graphically why #1 is different from this.

- Have students work on #1 for a few minutes, then go over it at the board. Possibly have a student do the problem on the board if anyone feels confident.
- Work on #2 and #3 until they get it. Go around and help students as needed.
- Discuss #4 in the remaining time.