

Taker Name:

Key

GTID: 90

Section:

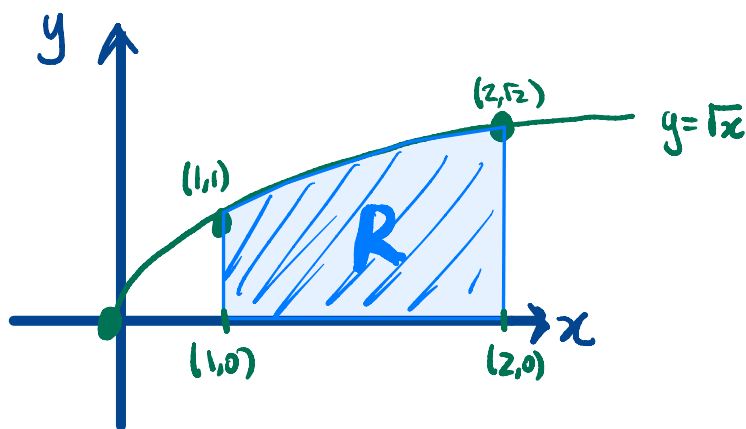
Grader #1:

GTID: 90

§15.2: Double Integrals

Sketch the region of integration R , and evaluate the double integral $\iint_R f(x, y) dA$.

R is bounded by $y = 0$, $x = 1$, $x = 2$, and $y = \sqrt{x}$, $f(x, y) = \frac{3}{2}e^{y/\sqrt{x}}$.



$$\text{Volume} = \int_1^2 \int_0^{\sqrt{x}} \frac{3}{2} e^{y/\sqrt{x}} dy dx$$

$$= \int_1^2 \sqrt{x} \frac{3}{2} e^{y/\sqrt{x}} \Big|_0^{\sqrt{x}} dx$$

$$\int e^{t/k} dt = \overset{\text{u-sub}}{k} e^{t/k} + C$$

$$= \int_1^2 \frac{3}{2} \sqrt{x} [e^{\sqrt{x}/\sqrt{x}} - e^0] dx = \int_1^2 \frac{3}{2} (e-1) \sqrt{x} dx$$

$$= \frac{3}{2} (e-1) x^{3/2} \Big|_1^2 = \boxed{(e-1) [2^{3/2} - 1]}$$

A

J

N

G2:

A

J

N

G3:

A

J

N