Exercise2.3

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Exercise. *Let R be the rectangle in the $xy-$ plane with vertices at $(1,0),(2,0),(1,3),(2,3)$.Integrate the following functions over R.*

- x^2y^2.
- 1.
- x^2+y^2.
- $\sqrt{x+\frac{2}{3}y}$.

- $\int_0^3\int_1^2 x^2y^2dxdy=\int_0^3(\frac{1}{3}x^3y^2\big|_1^2)dy=\int_0^3\frac{7}{3}y^2dy=21$.
- $\int_0^3\int_1^2 dxdy=3$.
- $\int_0^3\int_1^2(x^2+y^2)dxdy=\int_0^3(\frac{1}{3}x^3+xy^2)\big|_1^2dy=16$.
- $\int_0^3\int_1^2\sqrt{x+\frac{2}{3}y}dxdy=\int_0^3(\frac{2}{3}(x+\frac{2}{3}y)^{\frac{3}{2}}\Big|_1^2)dy=0.4(9-3^{\frac{3}{2}}-2^{\frac{5}{2}})$.

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