Multiple Integration
Double Integrals

Question

Evaluate the following double integral by inspection.

$\int\int_S (x + y)\, dA,$

where S is the square $0 \le x \le a$, $0 \le y \le a$.

Answer

From the symmetry of S, with respect to x and y

$\int\int_S (x + y)\, dA$
$= 2 \times$ volume of wedge
$= 2 \times \frac{1}{2}(a^2)a = a^3$