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cq/test2

T1

$$D = \{(u, v) | u \geq 0, v \geq 0\}$$

$$\iint_D e^{-u^2-v^2-2uv\cos\alpha} dudv$$

α

T2

$$S = \{(x, y, z) \in \mathbf{R}^3 | x + y + z = 1, x \geq 0, y \geq 0, z \geq 0\},$$

$$\iiint_S xyz dS$$

T3

$$f \in C^1(\mathbf{R}^2), \quad |\nabla f|^2 = \left(\frac{\partial f}{\partial x}\right)^2 + \left(\frac{\partial f}{\partial y}\right)^2 = 1$$

(1) $\forall P, Q \in \mathbf{R}^2$

$$|f(P) - f(Q)| \leq |PQ|$$

(2) $\vec{r}(t) = x(t) \vec{i} + y(t) \vec{j} \quad (t \in [a, b])$

$$\frac{d\vec{r}}{dt} = \frac{\partial f}{\partial x} \vec{i} + \frac{\partial f}{\partial y} \vec{j}$$

: $\vec{r}(t)$.