Math 311 Quiz 1 Version A

1. Please fill in the missing blanks to make the theorem correct.

The Change of Variables Theorem for Multiple Integrals: Given open sets U and V in $\mathbf{R}^n$, let $G \colon U \to V$ be a one-to-one transformation of class C^1 whose derivative $DG(u)$ is invertible for all $u \in U$. Suppose that $T \subset U$ and $S \subset V$ are measurable sets such that $\overline{T} \subset U$ and $G(T) = S$. If f is an integrable function on S, then $f \circ G$ is

$$\boxed{}$$ on T, and

$$\int \cdots \int_S f(x)d^n x = \int \cdots \int_T \boxed{}.$$