

Agenda for Friday, May 24, 2024

Substitutions, cont

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Reminders

- Office hours Fri 2-3 in Locy 203, Fri 3-4 with Kai-hsiang Locy 212
- ! MyLab on substitutions due Sun
- ! Exam 2 Tuesday

Recap

Substitutions, cont

Geometric meaning of Jacobian

Change of variables formula for double integrals

Example 1. Let T be the transformation given by $x = 2u + v$, $y = u + 2v$

(a) Find the inverse transformation T^{-1} .

(b) Compute the Jacobians of T and T^{-1} .

Example 2. Use the change of variables $x = 2u + v$, $y = u + 2v$ to evaluate the integral $\iint_R x - 3y \, dA$ where R is the triangular region with vertices $(0, 0)$, $(2, 1)$, and $(1, 2)$.

Example 3. Use a change of variables to compute $\iint_R \frac{x-2y}{3x-y} dA$ where R is the region bounded by $x-2y=0$, $x-2y=4$, $3x-y=1$, $3x-y=8$.