Transform Region of Integration.

Spring 2016

Attendance Quizzes

April 4, 2016

Quiz 25 Transform Region of Integration.

Find a transformation $(x, y) = T(r, s) = (ar + bs, cr + ds)$ such that
$$T(1, 0) = (2, 3), T(0, 1) = (1, 7)$$

Answer: $(x, y) = (2r + s, 3r + 7s)$.

Use it to transform the $\iint_R (x - y)dA$ where R is the parallelogram with corners $(0, 0), (2, 3), (3, 10), (1, 7)$. Then calculate the integral.

Answer:

$$\int_{s=0}^{1} \int_{r=0}^{1} (2r + s - 3r - 7s)11 \, dr \, ds. = -77/2$$