

Find a number  $a$  so that the change of variables  $s = x + ay$ ,  $t = y$  transforms the integral

$$\iint_R dx dy$$

over the parallelogram  $R$  in the  $xy$ -plane with vertices  $(0, 0)$ ,  $(26, 0)$ ,  $(-30, 11)$ ,  $(-4, 11)$  into an integral

$$\iint_T \left| \frac{\partial(x, y)}{\partial(s, t)} \right| ds dt$$

over a rectangle  $T$  in the  $st$ -plane.

$$a = \boxed{\phantom{000}}$$

What is  $\left| \frac{\partial(x, y)}{\partial(s, t)} \right|$  in this case?

$$\left| \frac{\partial(x, y)}{\partial(s, t)} \right| = \boxed{\phantom{000}}$$

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$$\iint_T \left| \frac{\partial(x, y)}{\partial(s, t)} \right| ds dt$$

over a rectangle  $T$  in the  $st$ -plane.

$$a = \boxed{30/11}$$

What is  $\left| \frac{\partial(x, y)}{\partial(s, t)} \right|$  in this case?

$$\left| \frac{\partial(x, y)}{\partial(s, t)} \right| = \boxed{1}$$