

If  $R = \{(x, y) : a \leq x \leq b, y_1(x) \leq y \leq y_2(x)\}$ , then

$$\iint_R f(x, y) dA = \int_a^b \int_{y_1(x)}^{y_2(x)} f(x, y) dy dx.$$

If  $R = \{(x, y) : c \leq y \leq d, x_1(y) \leq x \leq x_2(y)\}$ , then

$$\iint_R f(x, y) dA = \int_c^d \int_{x_1(y)}^{x_2(y)} f(x, y) dx dy.$$