

$$\begin{aligned}
\iint_D 2xy \, dA &= \int_0^1 \int_{2x}^{3-x} 2xy \, dy \, dx = \int_0^1 [xy^2]_{y=2x}^{y=3-x} \, dx \\
&= \int_0^1 x[(3-x)^2 - (2x)^2] \, dx = \int_0^1 (-3x^3 - 6x^2 + 9x) \, dx \\
&= \left[-\frac{3}{4}x^4 - 2x^3 + \frac{9}{2}x^2\right]_0^1 = -\frac{3}{4} - 2 + \frac{9}{2} = \frac{7}{4}
\end{aligned}$$

