

$$\begin{aligned}
\int_0^1 \int_{x^2}^{\sqrt{x}} (3x + y) \, dy \, dx &= \int_0^1 \left[ 3xy + \frac{1}{2}y^2 \right]_{x^2}^{\sqrt{x}} dx \\
&= \int_0^1 \left( 3x^{3/2} + \frac{1}{2}x - 3x^3 - \frac{1}{2}x^4 \right) dx \\
&= \left[ \frac{6}{5}x^{5/2} + \frac{1}{4}x^2 - \frac{3}{4}x^4 - \frac{1}{10}x^5 \right]_0^1 = \frac{3}{5}
\end{aligned}$$

