$$\int_0^1 \int_{x^2}^{\sqrt{x}} (3x + y)\ dy\ dx \quad = \int_0^1 \left[3xy + \frac{1}{2}y^2 \right]_{x^2}^{\sqrt{x}} dx$$

$$= \int_0^1 \left(3x^{3/2} + \tfrac{1}{2}x - 3x^3 - \tfrac{1}{2}x^4 \right) dx$$

$$= \left[\tfrac{6}{5}x^{5/2} + \tfrac{1}{4}x^2 - \tfrac{3}{4}x^4 - \tfrac{1}{10}x^5 \right]_0^1 = \tfrac{3}{5}$$