

$$A: y \geq x^2, x \leq y \leq 2x$$

$$\text{AREA} = \int_0^1 \int_x^{2x} dy dx + \int_1^2 \int_{x^2}^{2x} dy dx =$$

$$= \int_0^1 [y]_x^{2x} dx + \int_1^2 [y]_{x^2}^{2x} dx =$$

$$= \int_0^1 x dx + \int_1^2 (2x - x^2) dx = \left[\frac{x^2}{2} \right]_0^1 + \left[x^2 - \frac{x^3}{3} \right]_1^2 =$$

$$= \frac{1}{2} + \left(5 - \frac{8}{3} - 1 + \frac{1}{3} \right) = \frac{1}{2} + 3 - \frac{7}{3} = \frac{3+18-15}{6} = \frac{7}{6}$$

