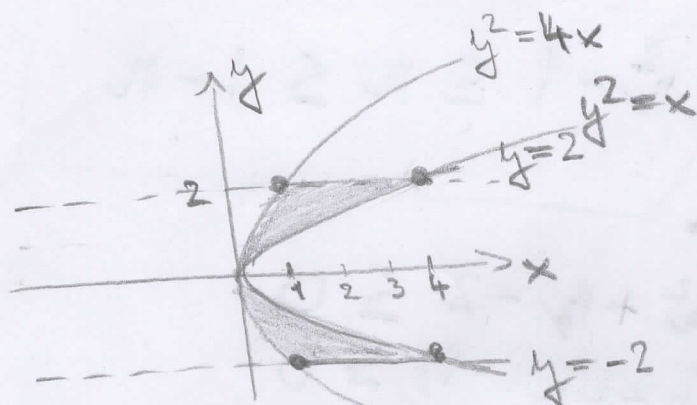


$$1. \iint_M \frac{x}{y^2} dx dy = \int_{-2}^2 \int_{\frac{y^2}{4}}^{\frac{y^2}{2}} \frac{x}{y^2} dx dy =$$



$$M = \left\{ (x, y) \in \mathbb{R}^2 : \begin{array}{l} -2 \leq y \leq 2 \\ \frac{y^2}{4} \leq x \leq \frac{y^2}{2} \end{array} \right\}$$

$$\begin{aligned} &= \int_{-2}^2 \frac{1}{y^2} \cdot \left[\frac{x^2}{2} \right]_{\frac{y^2}{4}}^{\frac{y^2}{2}} dy = \frac{1}{2} \int_{-2}^2 \frac{1}{y^2} \cdot \left(\frac{y^4}{2} - \frac{y^4}{16} \right) dy \\ &= \frac{1}{2} \cdot \frac{15}{16} \cdot \int_{-2}^2 y^2 dy = \frac{15}{32} \cdot 2 \cdot \int_0^2 y^2 dy = \frac{15}{16} \cdot \left[\frac{y^3}{3} \right]_0^2 \\ &= \frac{15}{16} \cdot \frac{8}{3} = \underline{\underline{\frac{5}{2}}} \end{aligned}$$