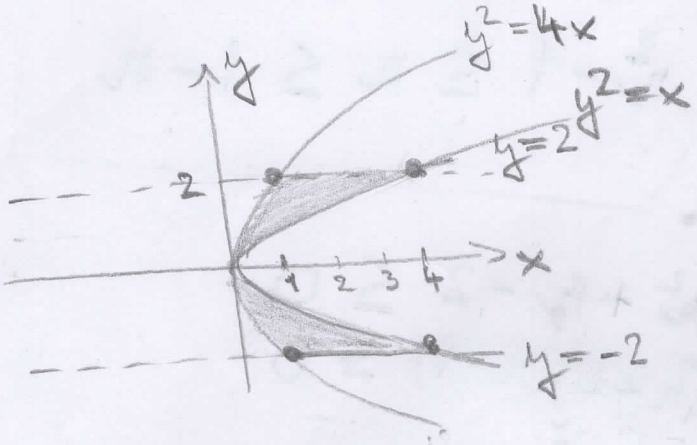
1. $\iint_M \frac{x}{y^2}\,dx\,dy = \int_{-2}^{2} \int_{\frac{y^2}{4}}^{y^2} \frac{x}{y^2}\,dx\,dy =$



$M = \left\{(x,y) \in \mathbb{R}^2 ;\ -2 \le y \le 2,\ \frac{y^2}{4} \le x \le y^2\right\}$

$= \int_{-2}^{2} \frac{1}{y^2} \cdot \left[\frac{x^2}{2}\right]_{\frac{y^2}{4}}^{y^2} dy = \frac{1}{2}\int_{-2}^{2} \frac{1}{y^2}\cdot\left(y^4 - \frac{y^4}{16}\right) dy$

$= \frac{1}{2}\cdot\frac{15}{16}\cdot\int_{-2}^{2} y^2\,dy = \frac{15}{32}\cdot 2\cdot\int_{0}^{2} y^2\,dy = \frac{15}{16}\cdot\left[\frac{y^3}{3}\right]_0^2$

$= \frac{15}{16}\cdot\frac{8}{3} = \frac{5}{2}$