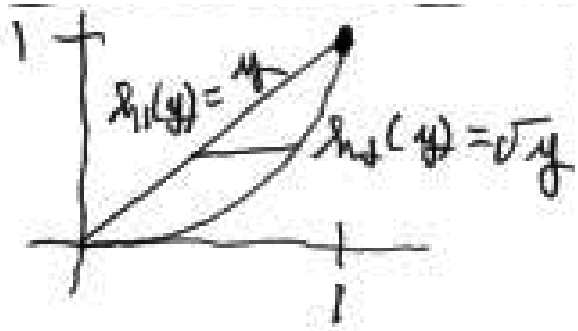
EXAMPLE.

$$\int_0^1 \int_y^{\sqrt{y}} (x+y)\,dxdy = \int_0^1 \left(\frac{x^2}{2} + xy\Big|_y^{\sqrt{y}}\right) dy =$$



$$\int_0^1 \left[\left(\frac{y}{2} + y^{3/2}\right) - \left(\frac{y^2}{2} + y^2\right)\right] dy = \int_0^1 \left(\frac{y}{2} + y^{3/2} - \frac{3y^2}{2}\right) dy =$$

$$\frac{y^2}{4} + \frac{2y^{5/2}}{5} - \frac{y^3}{2}\Big|_0^1 = \frac{1}{4} + \frac{2}{5} - \frac{1}{2} = \frac{3}{20}$$

This region is also vertically simple where $x = y \Longrightarrow y = x$ and $x = \sqrt{y} \Longrightarrow y = x^2$. Thus

$$\int_0^1 \int_y^{\sqrt{y}} (x+y)\,dxdy = \int_0^1 \int_{x^2}^{x} (x+y)\,dydx.$$