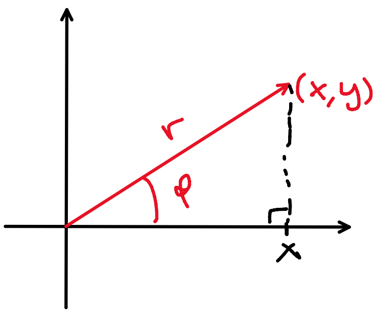
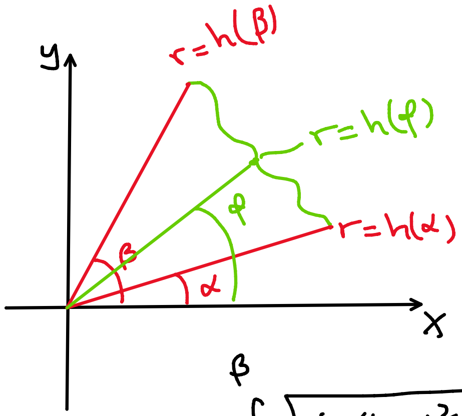
Polära koordinater:



$$r = \sqrt{x^2 + y^2}$$

$$\begin{cases} x = r\cos\varphi \\ y = r\sin\varphi \end{cases}$$



$$\alpha \le \varphi \le \beta$$

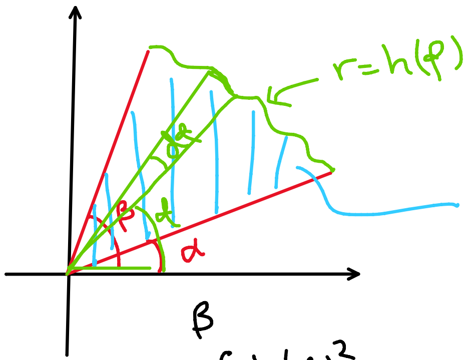
$$r = h(\varphi)$$

$$\begin{cases} x = h(\varphi)\cos\varphi \\ y = h(\varphi)\sin\varphi \end{cases}$$

$$\int_\alpha^\beta \sqrt{(x'(\varphi))^2 + (y'(\varphi))^2}\, d\varphi = \ldots$$

$$\begin{cases} x' = h'(\varphi)\cos\varphi - h(\varphi)\sin\varphi \\ y' = h'(\varphi)\sin\varphi + h(\varphi)\cos\varphi \end{cases}$$

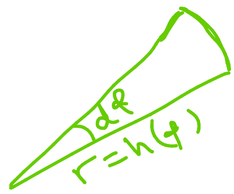
$$= \ldots = \boxed{\int_\alpha^\beta \sqrt{h(\varphi)^2 + h'(\varphi)^2}\, d\varphi}$$



$$\alpha \le \varphi \le \beta$$

$$0 \le r \le h(\varphi)$$

$$\int_\alpha^\beta \frac{h(\varphi)^2}{2}\, d\varphi$$



$$\frac{h(\varphi)^2}{2}\, d\varphi$$

$$\pi r^2 = \frac{2\pi r^2}{2}$$