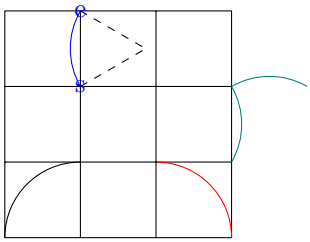
$$
\begin{aligned}
(x, y) - \backslash\mathrm{arc}(\theta_1 : \theta_2 : r) \\
\text{center} &= (x - r \cdot \cos(\theta_1), y - r \cdot \sin(\theta_1)) \\
\text{end} &= (x - r \cdot \cos(\theta_1) + r \cdot \cos(\theta_2), y - r \cdot \sin(\theta_1) + r \cdot \sin(\theta_2))
\end{aligned}
$$



three steps to decide θ_a, θ_2:

- Find the center of your circle, Calculate Δx between **start and center**.
- Find $\tan\theta_1 = \frac{\Delta y}{\Delta x}$, so that $\theta_1 = \theta_0 + \cdots$
- Using $\Delta x > 0 (< 0)$ to decide $\cdots$ by $\theta_1 \in [-\pi/2, \pi/2]$ or $\theta_1 \in [\pi/2, 3\pi/2]$
- Calculate Δx between **center and end**.