

Math support for moveRZ()

Step 1: Calculate c

$$C = \sqrt{r^2 + z^2} \quad // \text{ pythagorean theory}$$

Step 2: Calculate angle C

$$\begin{cases} C^2 = a^2 + b^2 - 2ab \cos C \\ a = b = 81 \end{cases} \quad // \text{ Cosine rule}$$

$$\Rightarrow \cos C = \frac{2 \cdot 81^2 - C^2}{2 \cdot 81^2}$$

$$C = \cos^{-1} \left(1 - \frac{C^2}{2 \cdot 81^2} \right) \quad // \text{ radians}$$

$$C = \cos^{-1} \left(1 - \frac{C^2}{2 \cdot 81^2} \right) \cdot (180/\pi) \quad // \text{ degrees}$$

Step 3: Calculate angle B

$$B = (180 - C) / 2$$

Step 4: Calculate angle BK

~~$$K = \arctan \left(\frac{r}{z} \right)$$~~

$$\text{angleBK} = B + K$$

Step 5: Calculate W

$$\text{angleW} = 180^\circ - C - (B + K)$$