

Fysiske dimensioner:

$$d_1 := 16.5 \quad a_1 := 0$$

$$d_4 := 24.5 \quad a_2 := 17.5$$

Koordinater:

$$xc := 25 \quad yc := -25 \quad zc := 5$$

Joint1 position:

$$q1 := \operatorname{atan}\left(\frac{yc}{xc}\right) = -0.785$$

Hjælpe formler (Udleveret af underviser):

$$r_2 := \left(xc^2 - (a_1 \cdot \cos(q1))^2\right) + \left(yc^2 - (a_1 \cdot \sin(q1))^2\right) = 1.25 \cdot 10^3$$

$$s := (zc - d_1) = -11.5$$

$$D := \left(\frac{(r_2 + s^2) - a_2^2 - d_4^2}{2 \cdot a_2 \cdot d_4}\right) = 0.555$$

Joint3 position:

$$q3 := \operatorname{atan}\left(\frac{-\sqrt{1 - D^2}}{D}\right) = -0.983$$

Joint2 position:

$$q2 := -\left(\frac{\pi}{2} - \left(\operatorname{atan}\left(\frac{s}{\sqrt{r_2}}\right) - \operatorname{atan}\left(\frac{d_4 \cdot \sin(q3)}{a_2 + d_4 \cdot \cos(q3)}\right)\right)\right) = -1.305$$

$$\frac{q2}{2 \cdot \pi} \cdot 360 = -74.771$$

$$q2 := \left(\operatorname{atan}\left(\frac{s}{\sqrt{r_2}}\right) - \operatorname{atan}\left(\frac{d_4 \cdot \sin(q3)}{a_2 + d_4 \cdot \cos(q3)}\right)\right) = 0.266$$

$$\frac{q2}{2 \cdot \pi} \cdot 360 = 15.229$$