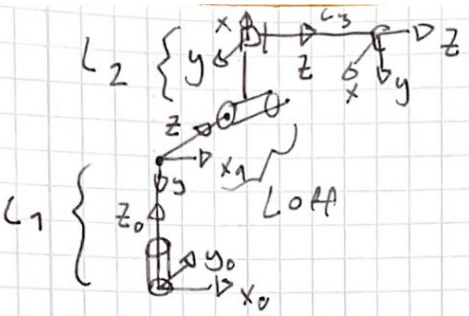
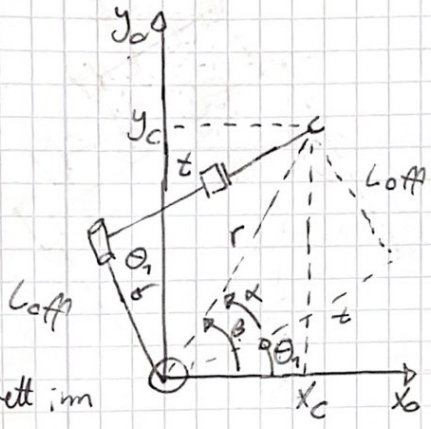


$$S(\theta - 90^\circ) = -C(\theta)$$
$$C(\theta - 90^\circ) = S(\theta)$$

Inverse Kinematics: Geometric Find $\theta_1^*, \theta_2^*, L_3^*$

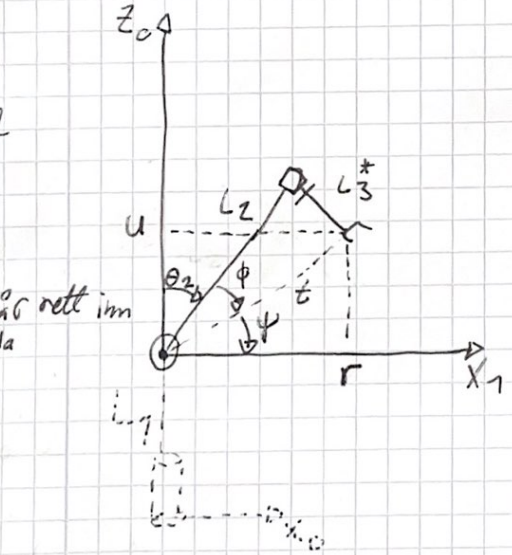
Top



z_0 går rett inn i tavla

$$\theta_1 = \beta - \alpha$$
$$r^2 = x_c^2 + y_c^2$$
$$r = \pm\sqrt{x_c^2 + y_c^2}$$
$$t = \pm\sqrt{r^2 - LOff^2}$$
$$\beta = A\tan2(y_c, x_c)$$
$$\alpha = A\tan2(LOff, t)$$
$$\alpha = A\tan2\left(LOff, \pm\sqrt{x_c^2 + y_c^2 - LOff^2}\right)$$
$$\underline{\theta_1 = \beta - \alpha}$$

Side



z_1 går rett inn i tavla

$$u = z_c - L_1$$
$$v^2 = t^2 - u^2$$
$$t^2 = L_2^2 + L_3^{*2} = r^2 + u^2$$
$$L_2^2 + L_3^{*2} = x_c^2 + y_c^2 + (z_c - L_1)^2$$
$$\underline{L_3^{*2} = \sqrt{x_c^2 + y_c^2 + (z_c - L_1)^2 - L_2^2}}$$

$$\theta_2 = 90 - \phi - \gamma$$
$$\psi = a\tan2(u, r)$$
$$\psi = a\tan2\left(z_c - L_1, \sqrt{x_c^2 + y_c^2}\right)$$
$$\phi = a\tan2(L_3^*, L_2)$$
$$\underline{\theta_2 = 90 - \phi - \psi}$$