



P<sub>2</sub> =

P<sub>3</sub> =

$$l_1^2 + l_2^2 - (l_1 - l_2)^2 = 2l_1l_2 \cos(\theta_{h1})$$

$$\theta_{h1} = 90^\circ - \arccos\left(\frac{l_1^2 + (l_1 - l_2)^2 - l_2^2}{2l_1(l_1 - l_2)}\right)$$

$$\theta_{a2} = \arccos\left(\frac{l_2^2 + (l_1 - l_2)^2 - l_1^2}{2l_2(l_1 - l_2)}\right) - 90^\circ$$

$$\theta_{h2} = \theta_{a2} + \arccos\left(\frac{l_2^2 + l_{h2}^2 - l_3^2}{2l_2l_{h2}}\right)$$

$$\theta_{a3} = \theta_{a2} - \arccos\left(\frac{l_2^2 + l_3^2 - l_{h2}^2}{2l_2l_3}\right)$$

$$c^2 = a^2 + b^2 - 2ab \cos(\theta)$$

$$\theta = \cos^{-1}\left(\frac{a^2 + b^2 - c^2}{2ab}\right)$$

