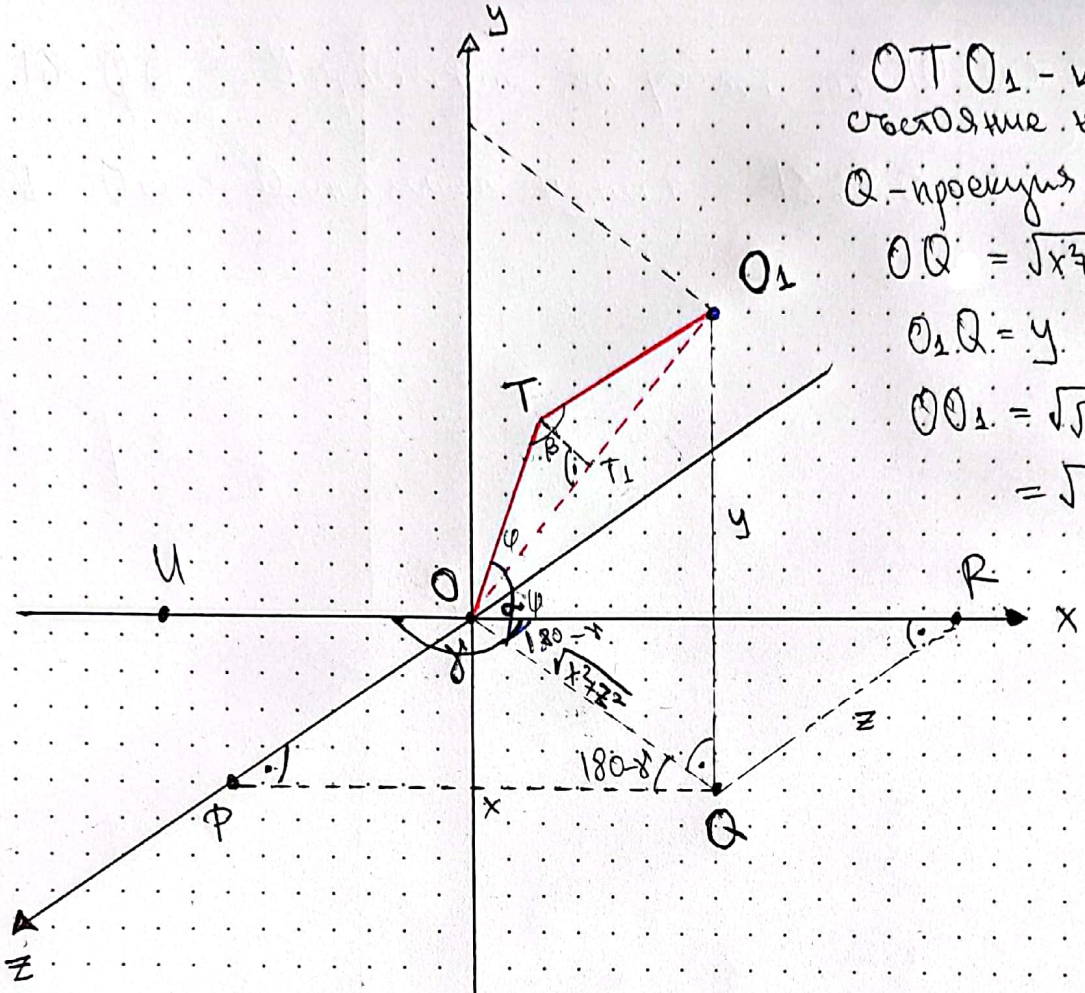

OTO_1 - крайно състояние на прихващача

Q - проекция на O_1 в $x=z$

$OQ = \sqrt{x^2+z^2}$

$O_1Q = y$

$OO_1 = \sqrt{\sqrt{x^2+z^2}^2 + y^2} = \sqrt{x^2+y^2+z^2}$

α - отвор на прихващача

$\measuredangle \alpha = \measuredangle O_1OQ + \measuredangle TOO_1$

$\measuredangle O_1OQ = \psi$:

$\tan\psi = \frac{OO_1}{OQ} = \frac{y}{\sqrt{x^2+z^2}}$

$\psi = \operatorname{arctan}\left(\frac{y}{\sqrt{x^2+z^2}}\right)$

$\measuredangle TOO_1 = \varphi$:

$\cos\varphi = \frac{OT_1}{OT} = \frac{\sqrt{x^2+y^2+z^2}}{2.a}$

$\varphi = \arccos\left(\frac{\sqrt{x^2+y^2+z^2}}{2a}\right)$

$\boxed{\measuredangle \alpha = \psi + \varphi}$

$\boxed{\measuredangle \beta = 180^\circ - 2\varphi}$

$\measuredangle \gamma = \measuredangle UOQ$

~~$\cos\gamma = \frac{OR}{OR}$~~

$\cos(180-\gamma) = -\cos\gamma = \frac{z}{x} = \frac{QR}{OR}$

$\boxed{\measuredangle \gamma = \arccos\left(\frac{z}{x}\right)}$