X = Xo + Wcost 4 = 40 + 4 sint  $x_p = x \cos \varphi + y \sin \varphi$ 4p = 4cos 9+ x sim 9  $X_{\rho} = X_{0} \cos \varphi + w \cot \cos \varphi + y_{0} \sin \varphi + h \sin t \sin \varphi$ YP = 40 cos P + hsint cos P + xo sin P + h cost sim P X4 = x0 cos q + w cost cosq + yo sim q + h sint, simq X2 = X0 cos q + wcostzeosq + yosimq + hsintz simq 41 = 40 cos P + hsinta cos P + Xo sim P + W costa sim P 4= 40 cos 9+ h sintz cos 9+ Xo sim 9+ wcostz sim 9  $x_4 - x_2 = u \cos \varphi(\cos t_4 - \cos t_2) + u \sin \varphi(\sin t_4 - \sin t_2)$   $y_4 - y_2 = u \cos \varphi(\sin t_4 - \sin t_2) + u \sin \varphi(\cos t_4 - \cos t_2)$ Z TRYGONOMETRII  $cost_4 - cost_2 = -2 sin \frac{t_4 - t_2}{2} \cdot sin \frac{t_4 + t_2}{2}$   $sint_4 - sint_2 = 2 sin \frac{t_4 - t_2}{2} \cdot cos \frac{t_4 + t_2}{2}$ NOWE  $b = \frac{t_1 + t_2}{2}$  $x_4 - x_2 = w\cos\varphi(-2\sin\alpha\sin b) + h\sin\varphi(2\sin\alpha\cos b)$ 44-42 = hcosp(2 sima cosb) + w sinp(-2 sina sinb)  $x_1-x_2=2\sin\alpha \left(h\sin\varphi\cos b-w\cos\varphi\sin b\right)$  $y_1-y_2=2\sin \alpha (h\cos \varphi \cos b-u\sin \varphi \sin b)$  $\frac{x_4 - x_2}{4^4 - 4^2} = \frac{h \sin \varphi \cos b - w \cos \varphi \sin b}{h \cos \varphi \cos b - w \sin \varphi \sin b}$  $c = \frac{h \sin \varphi \cos b - w \cos \varphi \sin b}{h \cos \varphi \cos b - w \sin \varphi \sin b}$ C(hcosPcosb-wsinPsinb)=hsinPcosb-wcosPsinb ch cos Pcosb - cw sin Psin b - h sin Pcosb + w cos Psin b=0 h(ccosq-sinq) cosb-w(csinq-cosq) sinb=0 h (ccosp-sing) cosb = w (c sin q-cosq) sinb  $\frac{\sin b}{\cos b} = tqb = \frac{h(c\cos \varphi - \sin \varphi)}{w(c\sin \varphi - \cos \varphi)}$  $\bigcirc C = \frac{x_4 - x_2}{y_4 y_2}$ 2  $b = atq \frac{h(ccos \varphi - sin \varphi)}{w(csin \varphi - cos \varphi)}$ 3 a =asin  $\begin{pmatrix} \frac{1}{2} & x_1 - x_2 \\ h \sin \varphi \cos b - w \cos \varphi \sin b \end{pmatrix}$ -2a=t2-t1 26 = t2+t4 t2=6-a t,=20+t2 t,=26-t2 FOR SWEEP=1,

JUST SWAP SIN P WITH

COS P AND VICE VERSA LARGE = 1, MIN (t4, t2) += 2TT, GDZIE MIN (t., t.)= { t. DLA t. < t. X4 = x0cos 9 + wcostcos 9 + yo sin 9 + hsint, sin 9 / cos 9 4= 40 cos 9 + hsint 2 cos 9 + X0 sin 9 + W cost 2 sin 9 /- sin 9 x, cos q = x0 cos2 q + w cos2 q cost, + y0 sin q cosq + h sin q cosq sint, - 425in 9 = -x05in2 9 - wsin2 9 cost2 - 405in 9 cos 9 - hsin 9 cos 9 sint2 X4005 P-42 sin P = X0(cos2 P - sin2 P) + W(cos2 Pcost2 - sin2 Pcost2) + h sin Pcos P(sint4 - sint2)  $\chi_0 = \frac{\chi_1 \cos \varphi - \chi_2 \sin \varphi - \omega (\cos^2 \varphi \cos \xi_1 - \sin^2 \varphi \cos \xi_2) - h \sin \varphi \cos \varphi (\sin \xi_1 - \sin \xi_2)}{(\cos^2 \varphi - \sin^2 \varphi)}$ X4 = x0cos 9 + wcostros 9 + 40 sin 9 + hsint, sin 9 / sin 9 4= 40 cos φ + hsint2 cos φ + xo sin φ + w cost2 sin φ/- cos φ x45in 9 = 40 sin2 9 + hsin2 4 sin t4 + x0 sin 9cos 9 + w sin 9cos 9 costa -42cos 9 = -40cos2 9-hcos2 9 sint2 - x0 sin 9cos 9+ w sin 9cos 9 cost2 x4 sin 9 - 42 cos 9 = 40 (sin2 φ - cos2 φ) + h (sin2 φsint4 - cos2 φsint4) + wsin 9cos φ (cost4 - cost2)  $y_0 = \frac{\chi_1 \sin \varphi - y_2 \cos \varphi - h(\sin^2 \varphi \sin \psi_1 - \cos^2 \varphi \sin \psi_2) - \omega \sin \varphi \cos \varphi(\cos \psi_1 - \cos \psi_2)}{(\sin^2 \varphi - \cos^2 \varphi)}$  $\bigcirc C = \frac{x_4 - x_2}{y_4 y_2}$ 2  $b = atq \frac{h(ccosq-sinq)}{w(csinq-cosq)}$ FOR SWEEP=1,

JUST SWAP SIN & WITH

COS P AND VICE VERSA)  $3 \quad \alpha = a sin \left(\frac{1}{2} \frac{x_1 - x_2}{h sin \varphi \cos b - w \cos \varphi \sin b}\right)$  $(\cos^2 \varphi - \sin^2 \varphi) = \frac{x_4 \cos \varphi - y_2 \sin \varphi - w(\cos^2 \varphi \cos \psi - \sin^2 \varphi \cos \psi) - h \sin \varphi \cos \varphi(\sin \psi - \sin \psi)}{(\cos^2 \varphi - \sin^2 \varphi)}$  $y_0 = \frac{\chi_4 \sin \varphi - y_2 \cos \varphi - h \left( \sin^2 \varphi \sin t_4 - \cos^2 \varphi \sin t_2 \right) - \omega \sin \varphi \cos \varphi \left( \cos t_4 - \cos t_2 \right)}{\left( \sin^2 \varphi - \cos^2 \varphi \right)}$