любое триг ур-ие можно свести к ур-ию высших степеней

sin^2 x=sin^2 x / 1 = sin^2 x / (sin^2 x + cos^2 x) =tg^2 x / (1+tg^2 x)
cos^2 x=cos^2 x/ (cos^2 x+ sin^2 x)= 1/(1+tg^2 x)
sin2x = sin2x/1=sin2x/(cos^2 x +sin^2 x)=2sinx*cosx/(cos^2 x +sin^2 x)=
=2tg x/(1+tg^2 x)
cos2x= cos2x/1=(cos^2 x-sin^2 x)/(sin^2 x+ cos^2 x)=(1-tg^2 x)/(1+tg^2 x)
tg2x=sin2x/cos2x= 2tg x/(1+tg^2 x)/(1-tg^2 x)/(1+tg^2 x)=
=2tg x/(1-tg^2 x)
tg3x=tg(x+2x)=(tgx+tg2x)/(1-tgx*tg2x)
tg(a+b)=sin(a+b)/cos(a+b)=(sina*cosb+sinb*cosa)/(cosa*cosb-sina*sinb)
=(tga+tgb)/(1-tga*tgb)

проверить отдельно
cosx=0

3tg3x - ctg2x = 4tgx
3(tgx+tg2x)/(1-tgx*2tg x/(1-tg^2 x)) -
- (1-tg^2 x)/(2tg x)=4tgx
tgx=a
3(a + 2a/(1-a^2)):(1-a*2a/(1-a^2))-(1-a^2)/2a=4a
(3a+6a/(1-a^2)):(1-a*2a/(1-a^2))-(1-a^2)/2a=4a
(3a(1-a^2+2)/(1-a^2)):((1-3a^2)/(1-a^2))-(1-a^2)/2a=4a
(3a(1-a^2+2)/(1-a^2))*(1-a^2)/(1-3a^2)-(1-a^2)/2a=4a
3a(1-a^2+2)/(1-3a^2)-(1-a^2)/2a=4a
6a^2(1-a^2+2)-(1-a^2)(1-3a^2)=8a^2*(1-3a^2)
18a^2-6a^4-1+4a^2-3a^4=8a^2-24a^4
15a^4+14a^2-1=0
<u>t=a^2, a^2=-1,(⅕)</u>
a=+-V(⅕)
tgx=V(1/5)
x=arctg(V(⅕))+Pk
x=arctg(-V(1/5)+Pk