$4\mathrm{tg}3y = 3\mathrm{tg}2x$ --- расписать по $\mathrm{tg}(2y+y)$, а $\mathrm{tg}2x$ по формуле
$2\sin x\cdot\cos(x-y) = \sin y$

$2\sin x(\cos x\cos y+\sin x\sin y)=\sin y$
$2\sin x\cos x\cos y+2\sin y\sin x^2=\sin y$
$\sin 2x\cos y+2\sin y(1-\cos 2x)/2=\sin y$
$\sin 2x\cos y+\sin y(1-\cos 2x)=\sin y$
$\sin 2x\cos y+\sin y-\sin y\cdot\cos 2x=\sin y$
$\sin 2x\cos y-\sin y\cdot\cos 2x=0$
$\sin(2x-y)=0$
$2x-y=Pk$
$2x=Pk+y$

$4\mathrm{tg}3y = 3\mathrm{tg}y$
$2(\mathrm{tg}2y+\mathrm{tg}y)/(1-\mathrm{tg}2y\,\mathrm{tg}y)=3\mathrm{tg}y$
$\mathrm{tg}2y=2\mathrm{tg}y/(1-\mathrm{tg}^2y)$
$\mathrm{tg}y=a$
$2((2a/(1-a^2)+a)/(1-2a^2/(1-a^2))=3a$
$2([(2a+a-a^3)/(1-a^2)]/[(1-3a^2)/(1-a^2)])=3a$
$2([(2a+a-a^3)]/[(1-3a^2)])=3a \qquad a\neq\pm1$
$2[a(3-a^2)]/[(1-3a^2)]-3a=0$
$2a([(3-a^2)]/[(1-3a^2)]-3)=0$
$a=0$
$(3-a^2-3(1-3a^2))/(1-3a^2)=0$
$(3-a^2-3+9a^2))/(1-3a^2)=0$
$8a^2/(1-3a^2)=0$
$a=0$
$\mathrm{tg}y=0$
$y=Ph$
$2x=Pk+Ph$
$x=(Pk+Ph)/2$
Ответ: $((Pk+Ph)/2;Ph)$