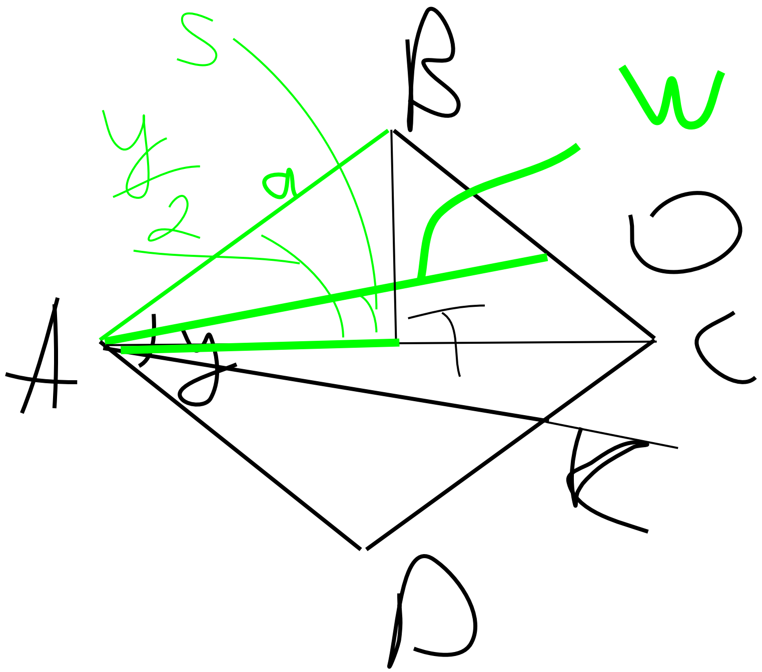
Ромб со стороной “a” и острым углом “y” разделён на три равновеликие части двумя лучами, проведёнными из вершины одного и того же угла. Определить длину отрезков лучей, лежащих внутри ромба.



S(ABO)=sin(y/2-s)*a*w/2

из трABT:
AT=cos(y/2)*a
AC=2cos(y/2)*a
S(ACO)=sin(s)w2cos(y/2)*a / 2=
=sin(s)w*cos(y/2)*a

S(ABO)=2*S(ACO)
sin(y/2-s)*a*w/2=2sin(s)w*cos(y/2)*a
sin(y/2-s)=4sin(s)cos(y/2)
sin(y/2)*cos(s)-sin(s)*cos(y/2)=
=4sin(s)cos(y/2)
sin(y/2)*cos(s)=5sin(s)*cos(y/2)
tg(y/2)=5tg(s)
tgs=(1/5)*tg*(y/2) => s=arctg((1/5)*tg*(y/2))

sin(arctg(x))=x/V(1+x^2)

arctgx=u
x=tgu
1+tg^2 u = 1/cos^2 u
1+tg^2 u = 1/ (1 - sin^2 u)
1+x^2 = 1/ (1 - sin^2 u)
1/(1+x^2) = 1 - sin^2 u
sin^2 u=1-1/(1+x^2)
sin^2 u=(1+x^2-1)/(1+x^2)
sin^2 u=x^2/(1+x^2)
sinu=x/V(1+x^2)

S(ABC)=3*S(ACO)
S(ABO)=sin(y/2)*a*2cos(y/2)*a/2=
=sin(y/2)*cos(y/2)*a^2

sin(y/2)*cos(y/2)*a^2=3*sin(s)w*cos(y/2)*a
w=[sin(y/2)*cos(y/2)*a^2]/[3*sin(s)*cos(y/2)*a]
w=[sin(y/2)*a]/[3*sin(s)]=[sin(y/2)*a]/[3*sin(arctg((1/5)*tg*(y/2)))]=
=[sin(y/2)*a]/[3*(1/5)*tg*(y/2) / V(1+{(1/5)tg*(y/2)}^2)]=
=[sin(y/2)*a*V(1+{(1/5)*tg*(y/2)}^2)]/[tg*(y/2)]=
=[sin(y/2)*a*V(1+{(1/5)*tg*(y/2)}^2)]/[sin*(y/2)/cos(y/2)]=
=cos(y/2)*a*V(1+{(1/5)*tg*(y/2)}^2)
Ответ:cos(y/2)*a*V(1+{(1/5)*tg*(y/2)}^2)