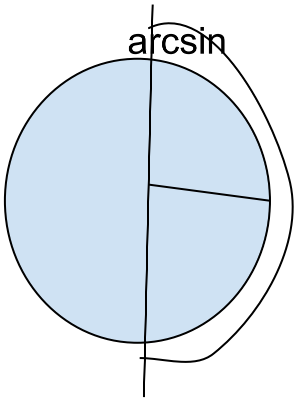
$$\int \sqrt{a^2 - x^2}\, dx$$

SV(a^2-x^2)dx=[x=asint]=SV(a^2-(asint)^2)d(asint)=
=SV(a^2-a^2sin^2t)d(asint)=SV(a^2(1-sin^2t))d(asint)=SaV(1-sin^2t)d(asint)=
=SaV(1-sin^2t) a*costdt=SaV(cos^2t) a*costdt=a^2Scos^2tdt=
=a^2S (1+cos2t)/2 dt=a^2/2(S1dt+Scos2tdt)=a^2/2(t+sin2t/2)+C=
=[t=arcsin(x/a)]=a^2/2(arcsin(x/a)+(0.5)sin2(arcsin(x/a)))+C=
=a^2/2[arcsin(x/a)+(0.5)2(x/a)V(1- (x/a)^2]+C =
a^2/2*arcsin(x/a)+(0.5)a^2/2* 2(x/a)V(1- (x/a)^2]+C=
=a^2/2*arcsin(x/a)+(0.5)1/2* 2(ax/a)V(a^2(1- (x/a)^2) +C
=a^2/2*arcsin(x/a)+(0.5)(x)V(a^2- x^2) +C



sin[2(arcsin(x/a))]=sin[2u]=2sinucosu=2(x/a)V(1- (x/a)^2)
(arcsin(x/a))=u | sin   (u э [-P/2;P/2])
(x/a)=sinu
cosu=+-V(1-sin^2 u) = +-V(1- (x/a)^2)= V(1- (x/a)^2)   (cosu>0)

sin[2arccosy] = sin[2u]=2sinucosu=
=2yV(1-y^2)
arccosy=u   u э [0;P]
y=cosu
sinu=+-V(1-cos^2u)=V(1-cos^2u)=
V(1-y^2)

sin[arctgy] = sin[u]=
arctgy=u   u э [-P/2;P/2]
y=tgu
1+tg^2u=1+sin^2u/cos^2u=
=1/cos^2u=1/(1-sin^2u)
1+y^2=1/(1-sin^2u)
1/(1+y^2)=1-sin^2u
sinu=+-V(1-1/(1+y^2))