In [1]:

```
var('x,a')
assume(a>0)
assume(a>x)
f(x)=sqrt(a^2-x^2)
L(x)=integrate(sqrt(1+(derivative(f(x),x))^2),x)
show(L)
```

Out[1]:

$$x \mapsto a \arcsin\left(\frac{x}{a}\right)\operatorname{sgn}\left(a^2 - x^2\right) \operatorname{sgn}\left(a\right)$$

In [2]:

```
#since 0<x<a, sgn(a^2-x^2)=1,  sgn(a)=1 for all x
L(x)=a*arcsin(x/a)
show(L)
```

Out[2]:

$$x \mapsto a \arcsin\left(\frac{x}{a}\right)$$

In [3]:

```
show(L(a)-L(0))
```

Out[3]:

$$\frac{1}{2}\,\pi a$$

In [0]:

```

```