In [1]:
```
# define y=f(x)
#
f(x)=sqrt(x+1)
show(f)
```

Out[1]:

$$x \mapsto \sqrt{x+1}$$

In [2]:
```
# finding dydx
#
dydx=diff(f(x),x)
show(dydx)
```

Out[2]:

$$\frac{1}{2\sqrt{x+1}}$$

In [3]:
```
# finding ds
#
ds=sqrt(1+(dydx)^2).simplify_rational()
show(ds)
```

Out[3]:

$$\frac{1}{2}\sqrt{\frac{4x+5}{x+1}}$$

In [4]:
```
# 2*pi*y*ds
show(2*pi*f(x)*ds.canonicalize_radical())
```

Out[4]:

$$\pi\sqrt{4x+5}$$

In [5]:
```
# the area of surface of rotation about x-axis
#
show(integrate(2*pi*f(x)*ds.canonicalize_radical(),x,0,1,hold=true))
```

Out[5]:

$$\int_0^1 \pi\sqrt{4x+5}\,dx$$

In [6]:
```
show(integrate(2*pi*f(x)*ds.canonicalize_radical(),x,0,1))
```

Out[6]:

$$-\frac{1}{6}\pi\left(5\sqrt{5}-27\right)$$

In [7]:
```
RR(integrate(2*pi*f(x)*ds.canonicalize_radical(),x,0,1))
```

Out[7]:
```
8.28315466528680
```

In [8]:
```
# the area of surface of rotation about y-axis
#
show(integrate(2*pi*x*ds.canonicalize_radical(),x,0,1,hold=true))
```

Out[8]:

$$\int_0^1 \frac{\pi\sqrt{4\,x+5}x}{\sqrt{x+1}}\,dx$$

In [9]:
```
show(integrate(2*pi*x*ds.canonicalize_radical(),x,0,1))
```

Out[9]:

$$\frac{1}{64}\,\pi\left(28\,\sqrt{5}+12\,\sqrt{2}+17\,\log\left(4\,\sqrt{5}+9\right)-17\,\log\left(12\,\sqrt{2}+17\right)\right)$$

In [10]:
```
RR(integrate(2*pi*x*ds.canonicalize_radical(),x,0,1))
```

Out[10]:
```
3.37380879355257
```

In [0]:
```

```