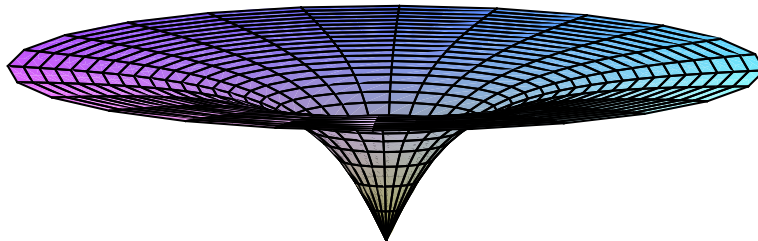```
> restart;
  f := r->arctan(r);
  x := r*cos(theta);
  y := r*sin(theta);
  z := f(r);
  plot3d([x, y, z], r = 0 .. 2*Pi, theta = 0 .. 2*Pi);
```

$$f := r \rightarrow \arctan(r)$$

$$x := r\cos(\theta)$$

$$y := r\sin(\theta)$$

$$z := \arctan(r)$$



```
> restart;
  V := int(Pi*tan(y)^2, y = 0 .. arctan(2*Pi));
  W := int(2*Pi*(arctan(2*Pi)-arctan(x))*x, x = 0 .. 2*Pi);
```

$$V := 2\pi^2 - \pi\arctan(2\pi)$$

$$W := 2\pi^2 - \pi\arctan(2\pi)$$

```
> restart;
  f := r->arctan(sqrt(r));
  x := r*cos(theta);
  y := r*sin(theta);
  z := f(r);
  plot3d([x, y, z], r = 0 .. 2*Pi, theta = 0 .. 2*Pi);
```
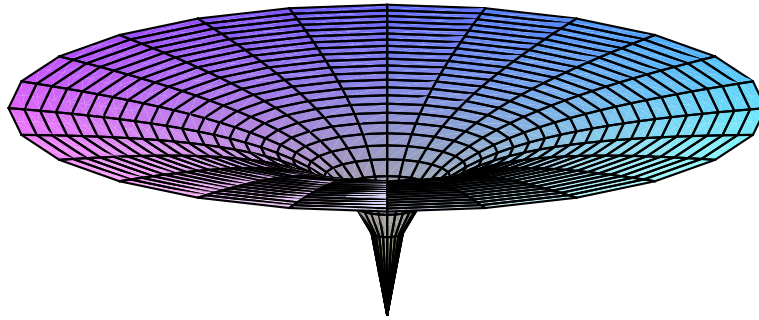
$$f := r \rightarrow \arctan(\sqrt{r})$$

$$x := r\cos(\theta)$$

$$y := r\sin(\theta)$$
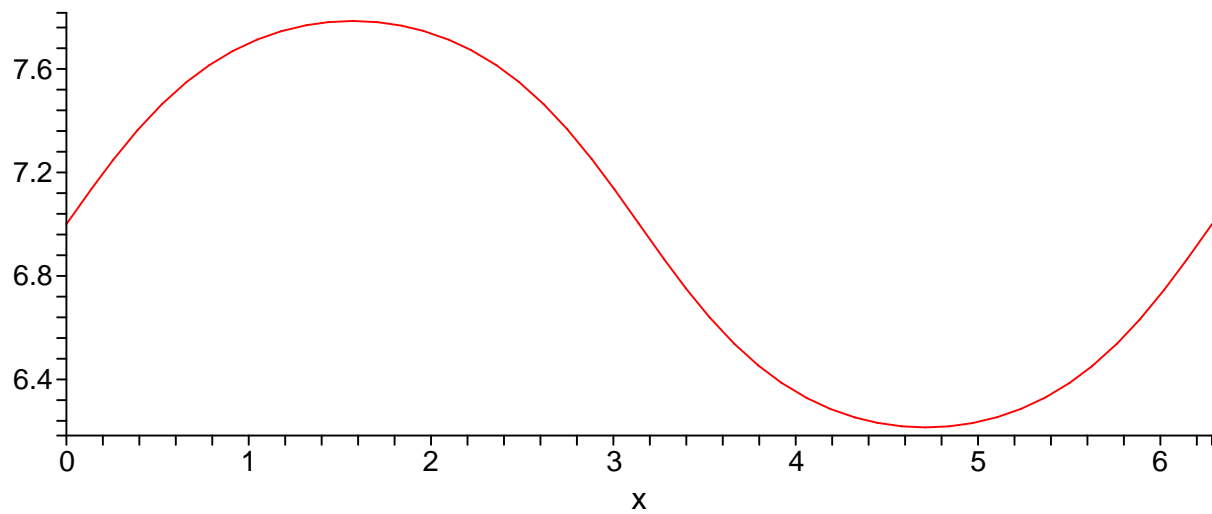
$$z := \arctan(\sqrt{r})$$

```
> restart;
  V:=int(Pi*tan(y)^4, y = 0 .. arctan(sqrt(2*Pi)));
  W:=int(2*Pi*(arctan(sqrt(2*Pi))-arctan(sqrt(x)))*x, x = 0 .. 2*Pi);
```

$$V := \frac{2}{3} \pi^{(5/2)} \sqrt{2} - \sqrt{2}\, \pi^{(3/2)} + \pi \arctan(\sqrt{2}\, \sqrt{\pi})$$

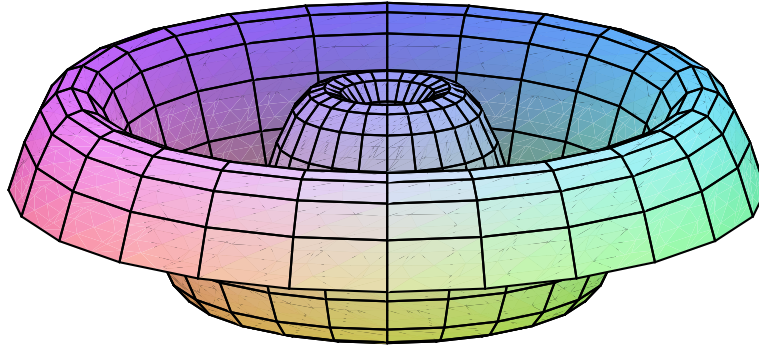$$W := \frac{2}{3} \pi^{(5/2)} \sqrt{2} - \sqrt{2}\, \pi^{(3/2)} + \pi \arctan(\sqrt{2}\, \sqrt{\pi})$$

```
> restart;
  simplify(arctan(sin(x)));
  plot(7+arctan(sin(x)), x = 0 .. 2*Pi);
```

$$\arctan(\sin(x))$$

```
> restart;
  f := r->arctan(sin(r));
  x := r*cos(theta);
  y := r*sin(theta);
  z := f(r);
  plot3d([x, y, z], r = 0 .. 3*Pi, theta = 0 .. 2*Pi);
```

$$f := r \rightarrow \arctan(\sin(r))$$

$$x := r\cos(\theta)$$

$$y := r\sin(\theta)$$

$$z := \arctan(\sin(r))$$

```
> restart;
  V := int(2*Pi*(7+arctan(sin(x)))*x, x = 0 .. 3*Pi);
  evalf(V);
  Digits := 40;
  evalf(V);
```

$$V := \int_{0}^{3\,\pi} 2\,\pi\,(7 + \arctan(\sin(x)))\,x\,dx$$

$$2003.451549$$

$$Digits := 40$$

$$2003.4515486302040324564342859113416659534$$

```
>
```