```
> restart;
  f:=2*sin(y);
  dfdy:=diff(f,y);
  L:=int(sqrt(dfdy^2+1),y=Pi/6..5*Pi/6);
  evalf(L);
```

$$f := 2\sin(y)$$

$$dfdy := 2\cos(y)$$

$$L := 2\sqrt{5}\ \mathrm{EllipticE}\left(\frac{2}{5}\sqrt{5}\right) - 2\sqrt{5}\ \mathrm{EllipticE}\left(\frac{1}{2}, \frac{2}{5}\sqrt{5}\right)$$

$$3.012453716$$

```
> restart;
  f:=x^(1/3)+4*x^(2/3);
  dfdx:=diff(f,x);
  L:=int(sqrt(dfdx^2+1),x=0..1);
  evalf(L);
```

$$f := x^{(1/3)} + 4\,x^{(2/3)}$$

$$dfdx := \frac{1}{3\,x^{(2/3)}} + \frac{8}{3\,x^{(1/3)}}$$

$$L := \int_0^1 \sqrt{\left(\frac{1}{3\,x^{(2/3)}} + \frac{8}{3\,x^{(1/3)}}\right)^2 + 1}\ dx$$

$$5.118694873$$

```
> restart;
  f:=tan(x);
  dfdx:=diff(f,x);
  A:=2*Pi*Int(f*sqrt(dfdx^2+1),x=Pi/5..7*Pi/16);
  evalf(A);
```

$$f := \tan(x)$$

$$dfdx := 1 + \tan(x)^2$$

$$A := 2\,\pi \int_{\frac{1}{5}\pi}^{\frac{7}{16}\pi} \tan(x)\sqrt{(1 + \tan(x)^2)^2 + 1}\ dx$$

$$78.67832836$$

```
> restart;
  f:=int(4*sin(t),t=0..y);
```

```
dfdy:=diff(f,y);
A:=2*Pi*int(f*sqrt(dfdy^2+1),y=0..Pi/4);
evalf(A);
```

$$f := -4\cos(y) + 4$$

$$dfdy := 4\sin(y)$$

$$A := 2\pi\left(4\sqrt{17}\,\mathrm{EllipticE}\left(\frac{4}{17}\sqrt{17}\right) - 4\sqrt{17}\,\mathrm{EllipticE}\left(\frac{1}{2}\sqrt{2}, \frac{4}{17}\sqrt{17}\right) + \frac{\sqrt{\pi} + (-5\ln(2) - 1)\sqrt{\pi} - 12\sqrt{2}\sqrt{\pi} - 2\sqrt{\pi}\ln\left(\frac{1}{2} + \frac{3}{8}\sqrt{2}\right)}{4\sqrt{\pi}}\right)$$

$$4.767342002$$

```
>
```