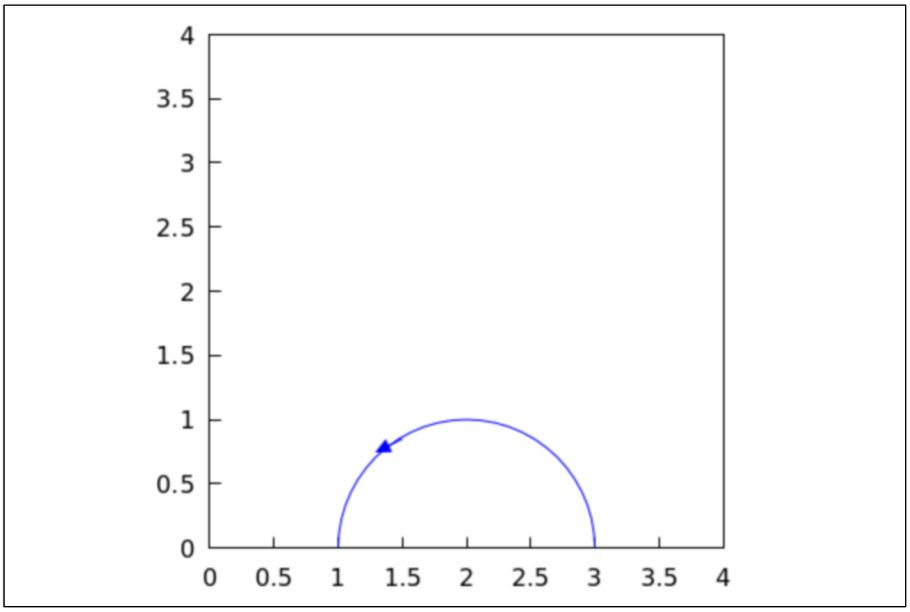
```
(%i1) kill(all);
(%o0) done

(%i1) z(t):=(2+cos(t)+%i·sin(t));
(%o1) z(t):=2+cos(t)+%i sin(t)

➔     wxdraw2d(
      xaxis=true,xaxis_type=solid,xrange=[0,4],
      yaxis=true,yaxis_type=solid,yrange=[0,4],
      proportional_axes=xy,
      head_length=0.3,
      head_angle=10,
        vector([1.5,0.85],[−0.2,−0.10]),

      parametric(realpart(z(t)),imagpart(z(t)),t,0,%pi));
```

(%t15)



(%o15)

evaluate the integral

```
(%i16) kill(all);
(%o0) done

(%i1) cintegral(p,  q,  a,  b):=block(
      f(z):=1/(z−2),
      g(t):=(p)+%i·(q),
      rectform(integrate(rectform(f(g(t))·diff(g(t),t)),t  , a, b)));
```

(%o1) $\text{cintegral}(p,q,a,b):=\text{block}\left(\text{f}(z):=\frac{1}{z-2},\text{g}(t):=p+\%\text{i}\,q,\ \text{rectform}\left(\int_a^b \text{rectform}\left(\text{f}(\text{g}(t))\left(\frac{\text{d}}{\text{d}\,t}\,\text{g}(t)\right)\right)\text{d}\,t\right)\right)$

```
(%i2) cintegral( 2+cos(t),sin(t),  0, %pi);
```
(%o2) %i π

exercises

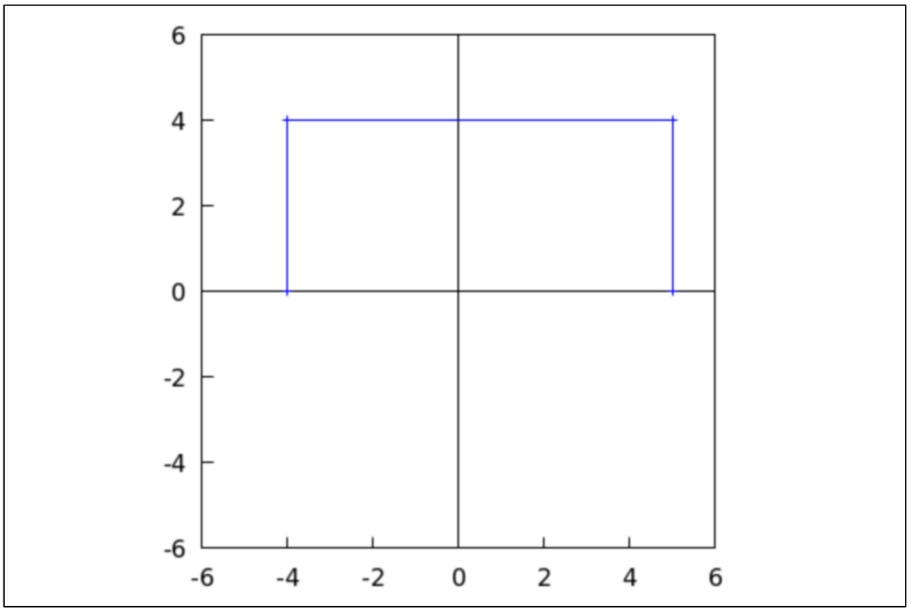
```
(%i3) kill(all);
```
(%o0) *done*

```
(%i1) pts:[[5,0],[5,4],[−4,4],[−4,0]];
```
(pts) **[[5,0],[5,4],[−4,4],[−4,0]]**

```
(%i17) wxdraw2d(
xaxis=true,xaxis_type=solid,xrange=[−6,6],
yaxis=true,yaxis_type=solid,yrange=[−6,6],
proportional_axes=xy,
    points_joined=true,

   points(pts))

;
```
(%t17)



(%o17)

```
(%i5) kill(all);
```
(%o0) *done*

(%i1)
```
cintegral(p,  q,  a,  b):=block(
f(z):=realpart(z),
g(t):=(p)+%i·(q),
rectform(integrate(rectform(f(g(t))·diff(g(t),t)),t  , a, b)));
```

(%o1)
$$\text{cintegral}(p,q,a,b):=\text{block}\left(\text{f}(z):=\text{realpart}(z),\text{g}(t):=p+\%i\,q,\text{rectform}\left(\int_a^b \text{rectform}\left(\text{f}(\text{g}(t))\left(\frac{\text{d}}{\text{d}\,t}\,\text{g}(t)\right)\right)\text{d}\,t\right)\right)$$

(%i6)
```
v1:cintegral(−4,t,  0,4);
```

(v1) $-16\ \%i$

(%i7)
```
v2:cintegral(t,4,   −4,  4);
```

(v2) 0

(%i8)
```
v3:cintegral(4,−t,  −4,0);
```

(v3) $-16\ \%i$

(%i9)
```
v1+v2+v3;
```

(%o9) $-32\ \%i$

1

(%i16)
```
kill(all);
```

(%o0) *done*

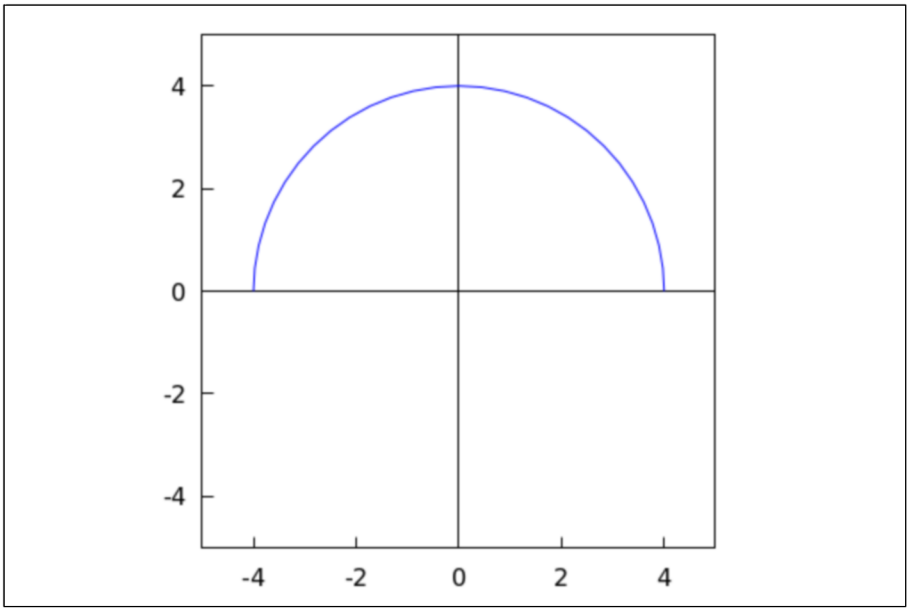
(%i1)
```
z(t):=4·(cos(t)+%i·sin(t));
```

(%o1) $z(t):=4\,(\cos(t)+\%i\,\sin(t))$

(%i3)
```
wxdraw2d(
xaxis=true,xaxis_type=solid,xrange=[−5,5],
yaxis=true,yaxis_type=solid,yrange=[−5,5],
proportional_axes=xy,

parametric(realpart(z(t)),imagpart(z(t)),t,0,%pi));
```

(%t3)



(%o3)

evaluate the integral

(%i4)
```
kill(all);
```
(%o0) *done*

(%i2)
```
cintegral(p,  q,  a,  b):=block(
f(z):=realpart(z),
g(t):=(p)+%i·(q),
rectform(integrate(rectform(f(g(t))·diff(g(t),t)),t  , a, b)));
```
(%o2) cintegral $(p,q,a,b):=$ block $(f(z):=$ realpart $(z), g(t):=p+$ %i $q,$ rectform $\left(\int_a^b \text{rectform}\left(f(g(t))\left(\frac{d}{dt}g(t)\right)\right)dt\right)$

(%i4)
```
cintegral(4·cos(t),4·sin(t),−%pi,−2·%pi);
```
(%o4) −8 %i π