In [1]: `12+4-5`

Out[1]: 11

In [2]: `2^10`

Out[2]: 1024

In [3]: `sin(pi/2)`

Out[3]: 1

In [4]: `sin(0.1)`

Out[4]: 0.0998334166468282

In [5]: `14+2*(5-3)`

Out[5]: 18

In [6]:
```
x = var('x')
eq = x^4 - 3//2 * x^3 - x + 3//2 == 0
solve(eq,x)
```

Out[6]: [x == -1/2*I*sqrt(3) - 1/2, x == 1/2*I*sqrt(3) - 1/2,

In [8]:
```
x = var('x')
eq2 = sqrt(x^2 + 2*x) == 3
solve(eq2,x)
```

Out[8]: [x == -sqrt(10) - 1, x == sqrt(10) - 1]

In [10]:
```
x = var('x')
y = var('y')
syst = [2*x + y == 3, x + 3*y == -1]
solve(syst,x,y)
```

Out[10]: [[x == 2, y == -1]]

In [11]:
```
x = var('x')
y = var('y')
syst2 = [2*x + x*y + 2*y == 59, 3*x - 2*x*y + 3*y ==
solve(syst2,x,y)
```

Out[11]: [[x == 7, y == 5], [x == 5, y == 7]]

In [12]:
```
x = var('x')
limit(sin(x)/x, x = 0)
```

Out[12]: 1

In [14]:
```
x = var('x')
limit((x^3 + 3*x^2 - 5)/(2*x^3 - 7*x), x = infinity)
```

Out[14]: 1/2

In [15]:
```
x = var('x')
limit((cos(x) + 1) / (x - pi), x = pi)
```

Out[15]: 0

In [16]:
```
f(x) = 3*x^3 + 2*x^2 - 5
diff(f(x),x)
```

Out[16]: 9*x^2 + 4*x

In [17]:
```
f(x) = sqrt(1 + x^4)
diff(f(x),x)
```

Out[17]: 2*x^3/sqrt(x^4 + 1)

In [21]:
```
f(x) = exp(x)*sin(x)*cos(x)
diff(f(x),x)
```

Out[21]: cos(x)^2*e^x + cos(x)*e^x*sin(x) - e^x*sin(x)^2

In [22]:
```
f(x) = 3*x^3 + 2*x^2 - 5
integrate(f(x),x,0,1)
```

Out[22]: -43/12
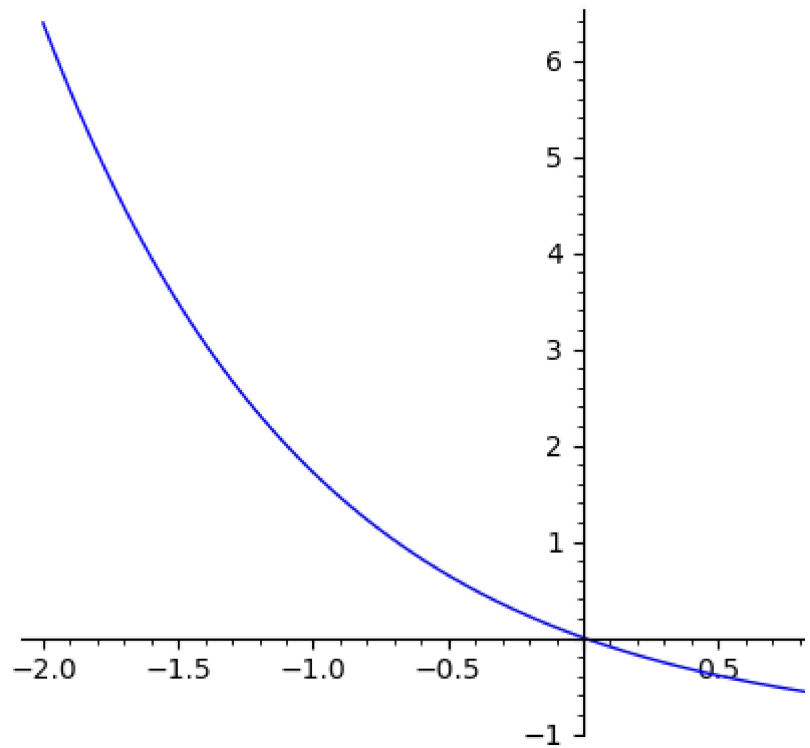
In [23]:
```
f(x) = 1/x^2
integrate(f(x),x,1,infinity)
```

Out[23]: 1

In [24]:
```
f(x) = exp(-x^2)
integrate(f(x),x,-infinity,infinity)
```

Out[24]: sqrt(pi)

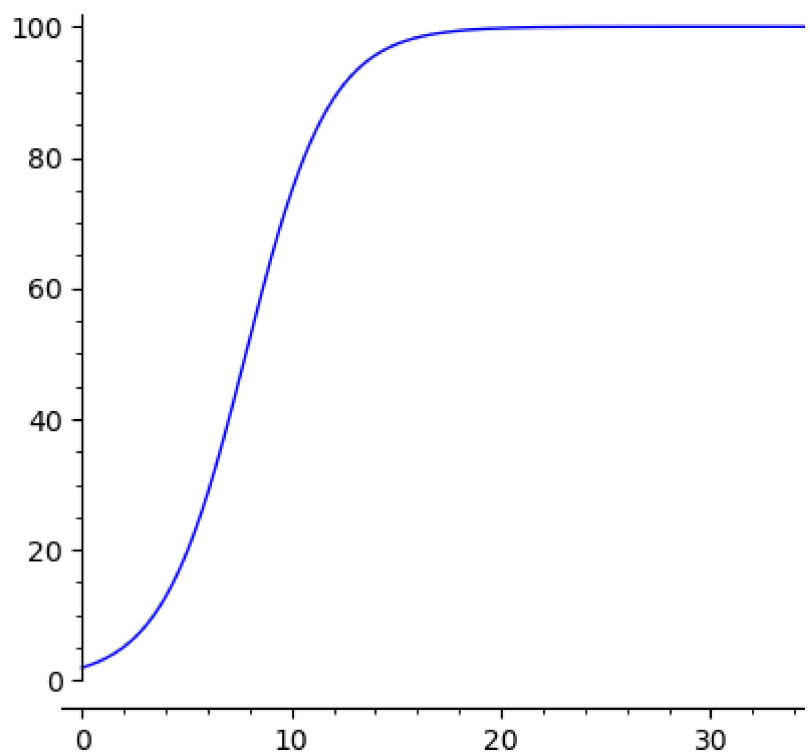In [25]:
```
f(x) = exp(-x) - 1
plot(f(x),-2,2)
```
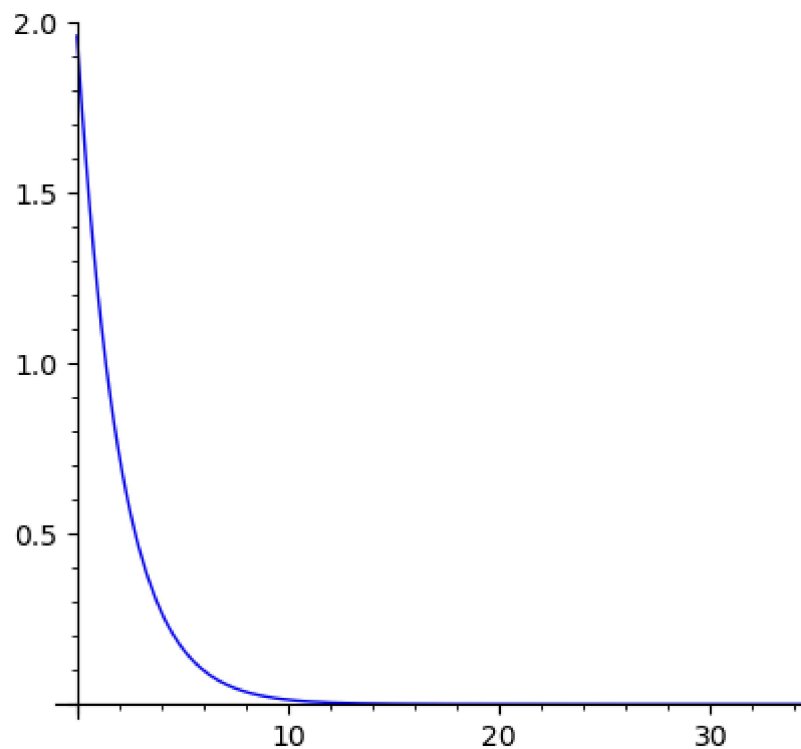
Out[25]:

In [27]:
```
f(x) = (200*exp(0.5*x))/(2*(exp(0.5*x)) + 100)
plot(f(x),0,50)
```
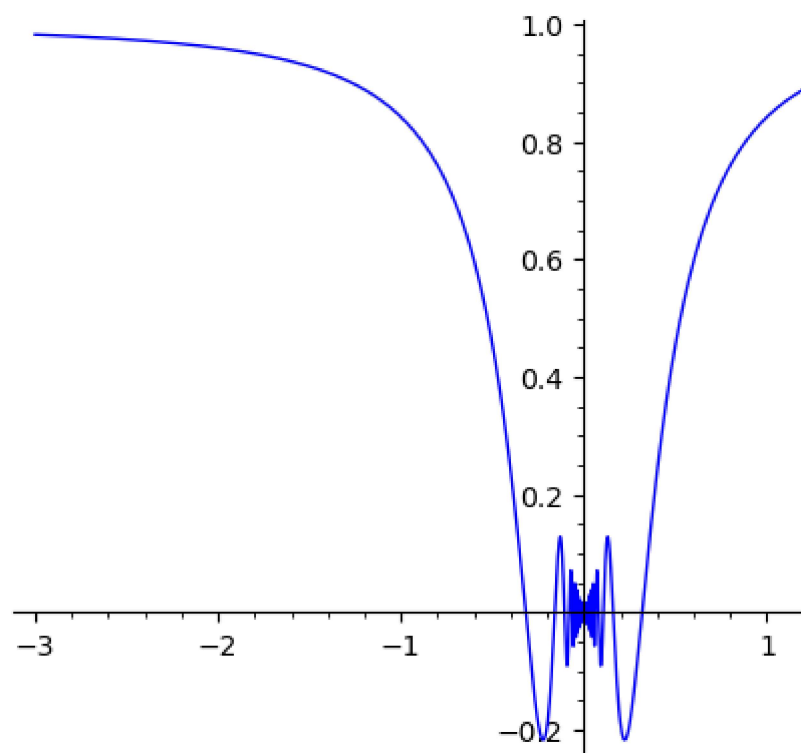
Out[27]:

In [28]:
```
f(x) = (200*exp(-0.5*x))/(2*(exp(-0.5*x)) + 100)
plot(f(x),0,50)
```
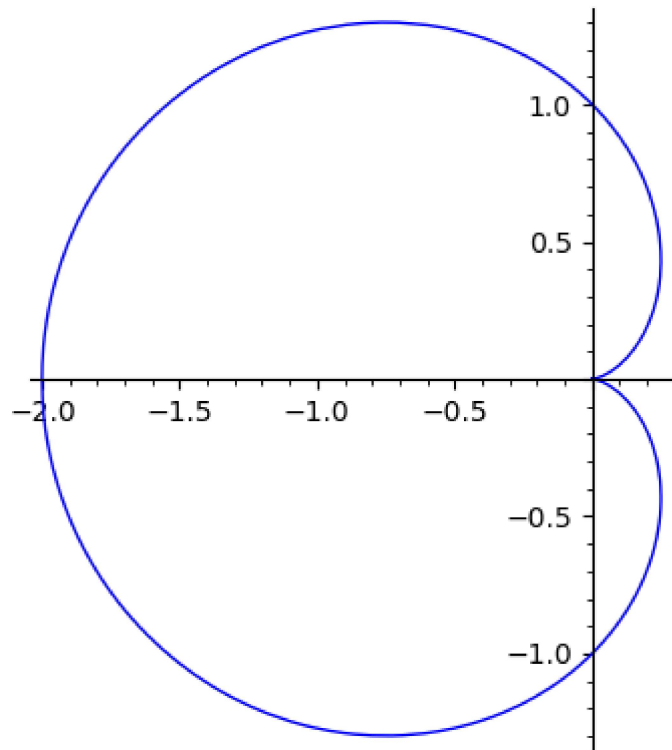
Out[28]:

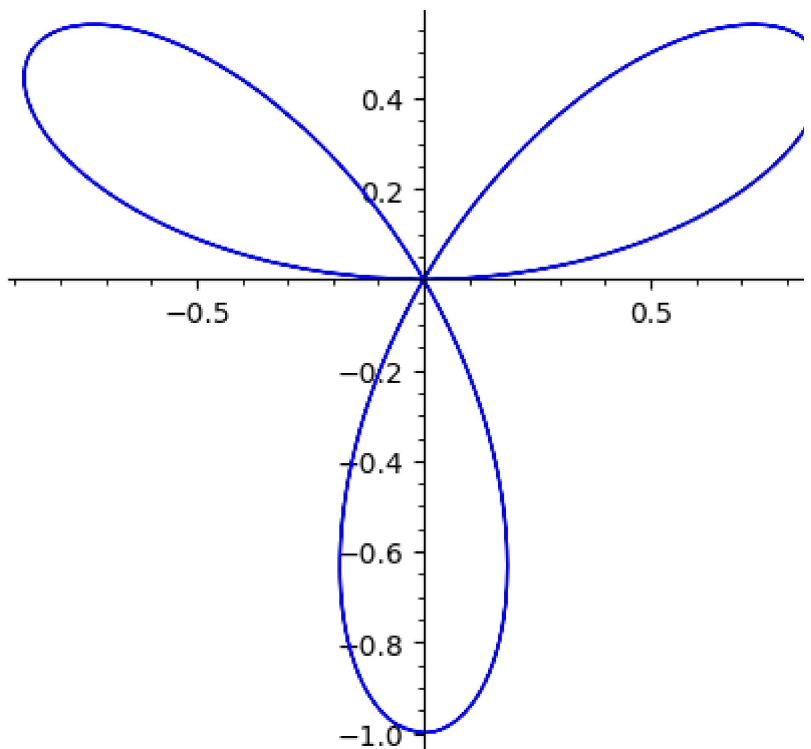In [29]:
```
f(x) = x*sin(1/x)
plot(f(x),-3,3)
```

Out[29]:

In [32]:
```
t = var('t')
f(t) = (1 - cos(t))*cos(t)
g(t) = (1 - cos(t))*sin(t)
parametric_plot((f(t), g(t)), (t, 0 , 2*pi))
```
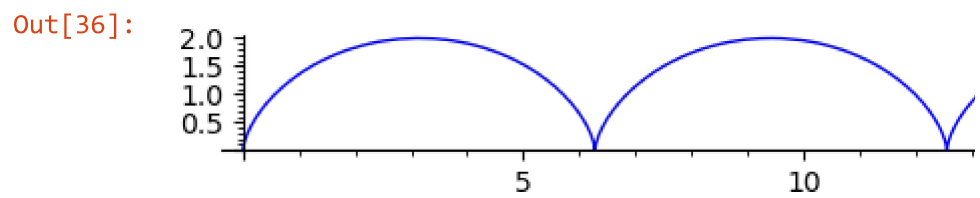
Out[32]:

In [34]:
```
f(t) = sin(3*t)*cos(t)
g(t) = sin(3*t)*sin(t)
parametric_plot((f(t),g(t)), (t, 0 , 2*pi))
```
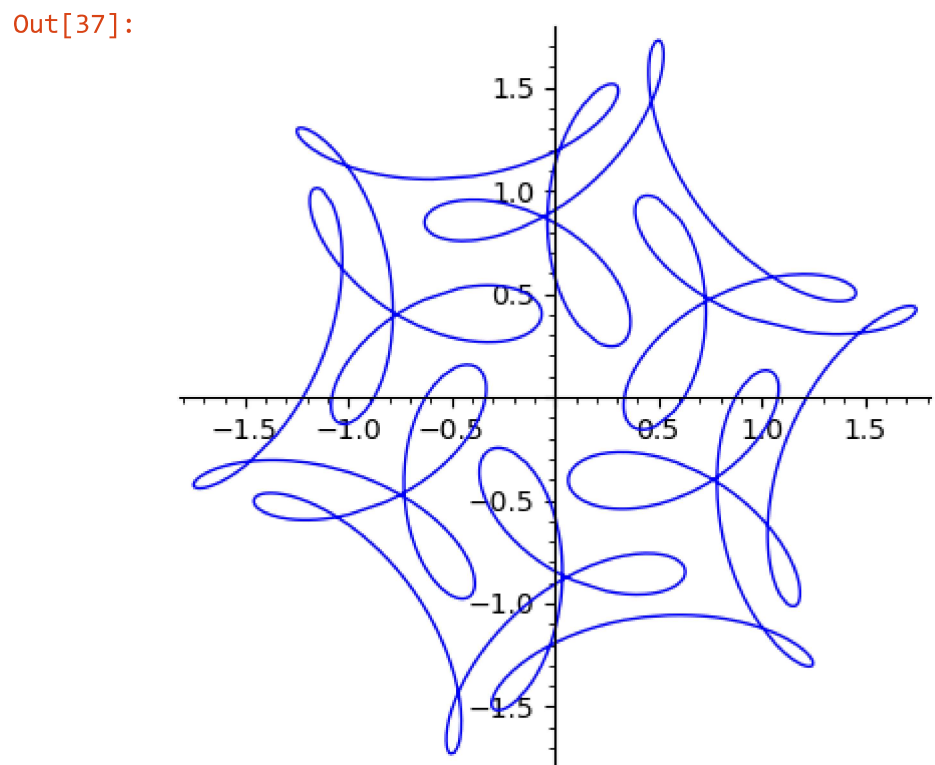
Out[34]:

In [36]:
```
f(t) = t - sin(t)
g(t) = 1 - cos(t)
parametric_plot((f(t),g(t)), (t, 0 ,6*pi))
```
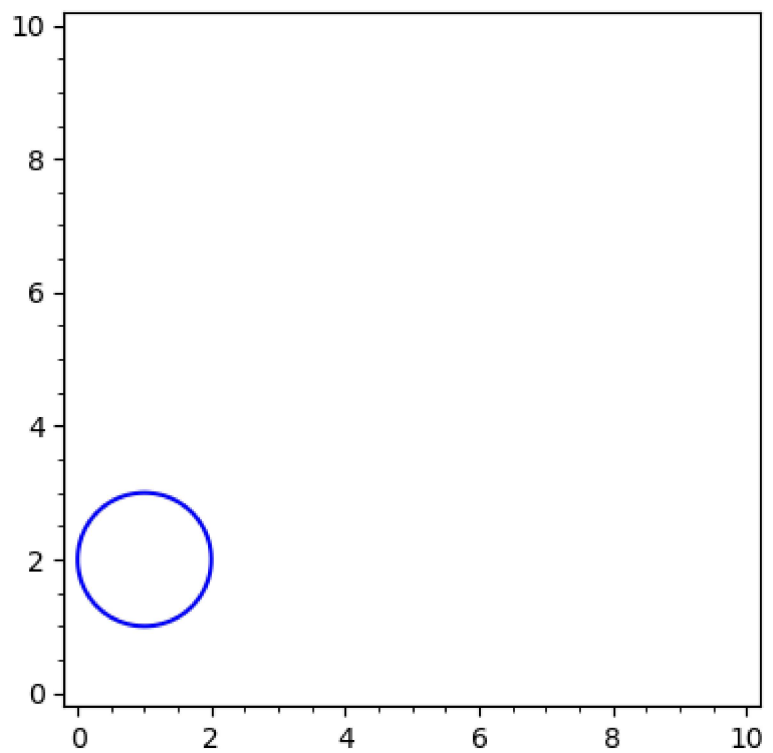
Out[36]:

In [37]:
```
f(t) = cos(t) + (cos(7*t)/2) + (sin(17*t))/3
g(t) = sin(t) + (sin(7*t)/2) + (cos(17*t))/3
parametric_plot((f(t),g(t)), (t, 0 , 2*pi))
```
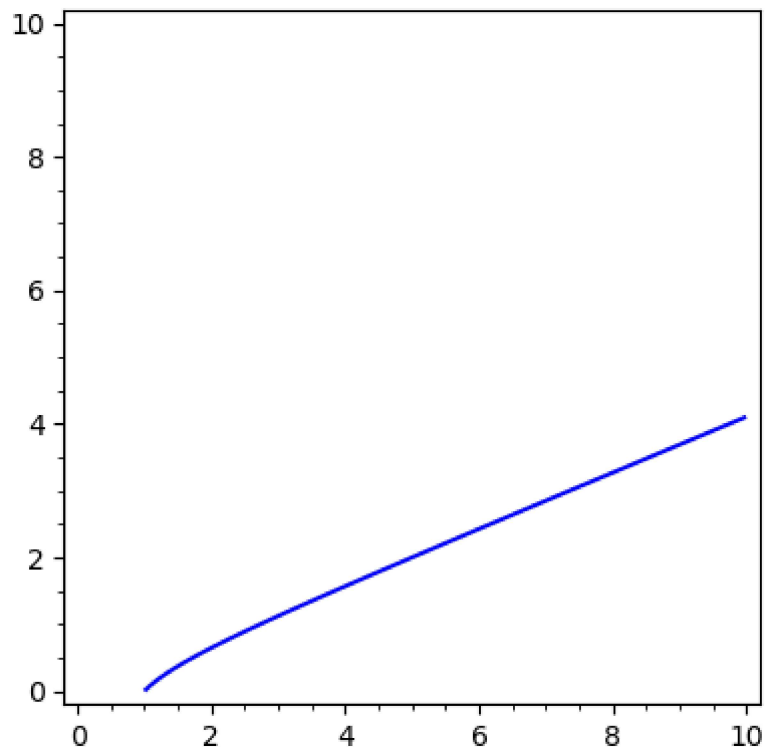
Out[37]:

In [40]:
```
x,y = var('x,y')
f(x,y) = x^2 + y^2 - 2*x - 4*y + 4
implicit_plot(f(x) == 0, (x,0,10), (y,0,10))
```
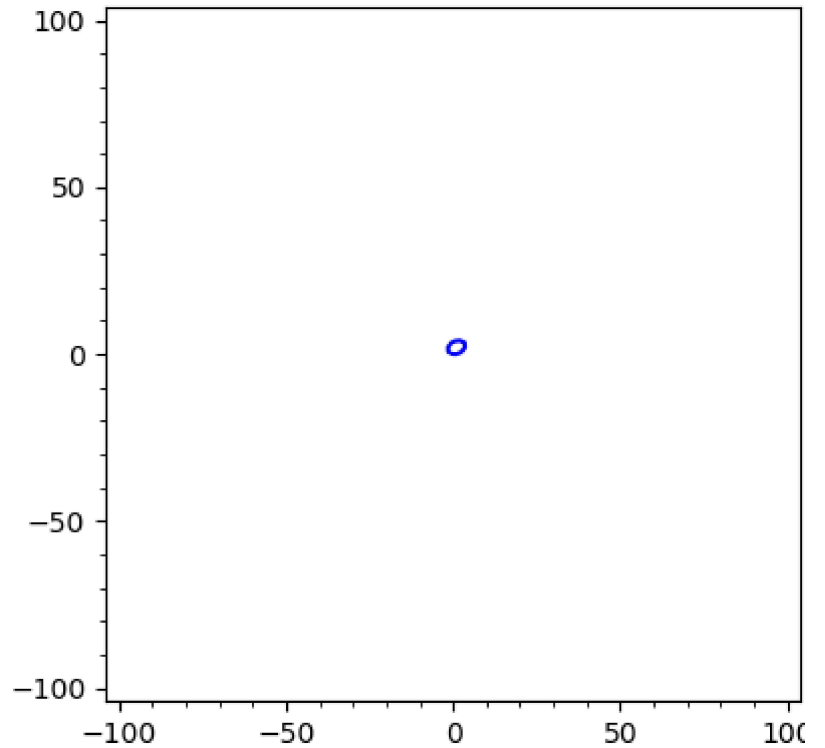
Out[40]:

In [41]:
```
f(x,y) = x^2 - 2*x*y - y^2
implicit_plot(f(x) == 1, (x,0,10), (y,0,10))
```

Out[41]:

In [43]:
```
f(x,y) = 6*x^2 - 4*x*y + 9*y^2 - 4*x - 32*y - 6
implicit_plot(f(x) == 0, (x,-100,100), (y,-100,100))
```

Out[43]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

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