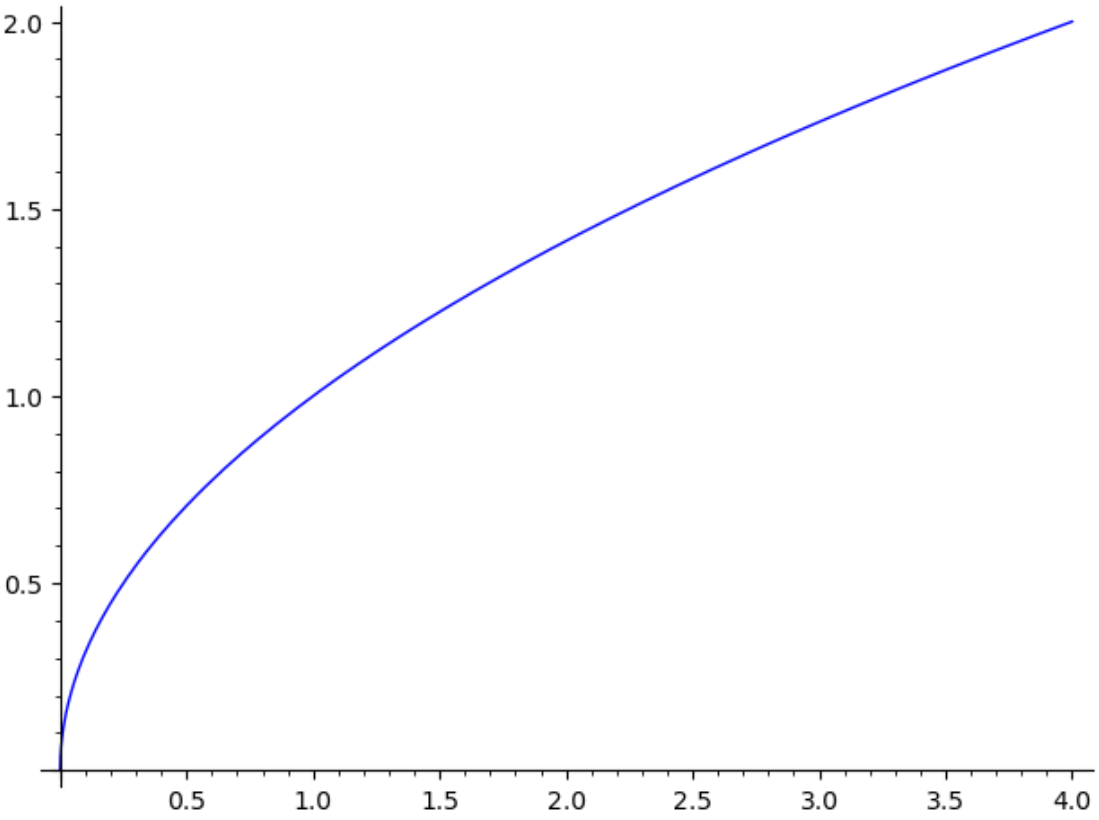
MATH1110H-A1-Solutions

August 21, 2025

[1]:
```
# MATH 1110H,  Fall 2025
# Solutions to Assignment #1
```

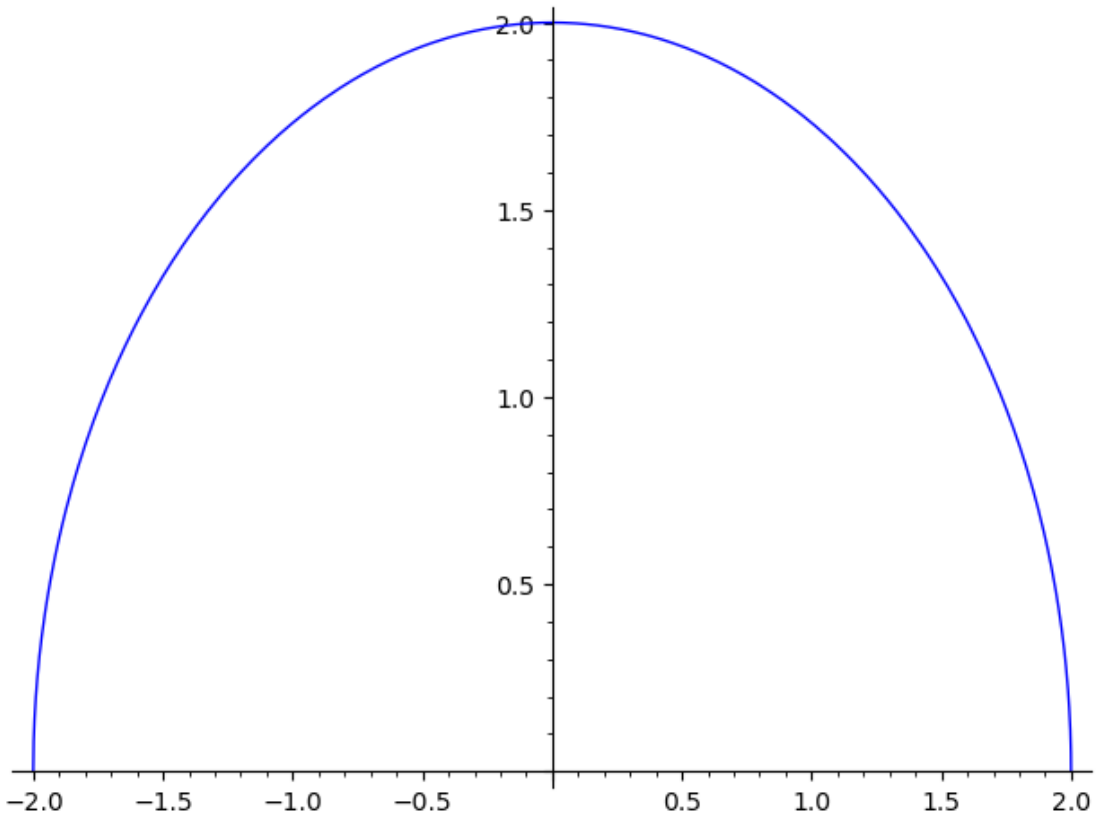
[2]:
```
# 1a
plot( sqrt(x), 0, 4 )
```

[2]:



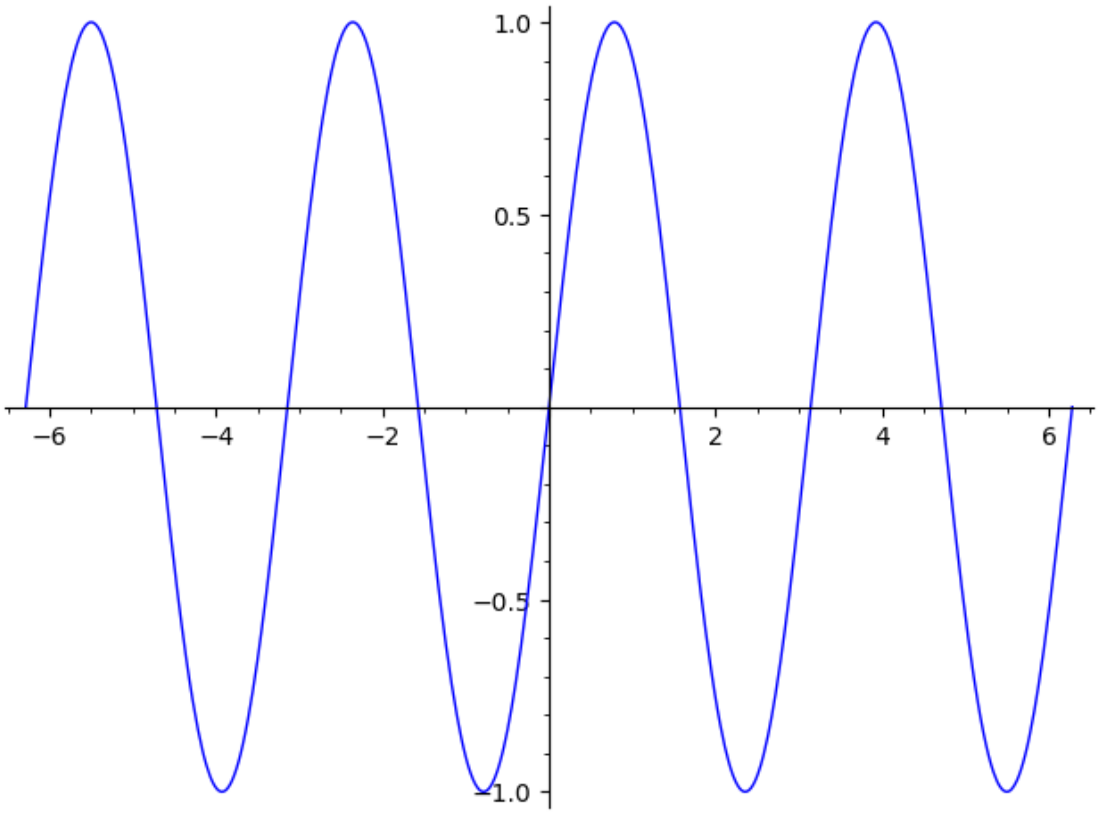
[3]:
```
# 1b
plot( sqrt( 4-x^2 ), -2, 2 )
```

[3]:



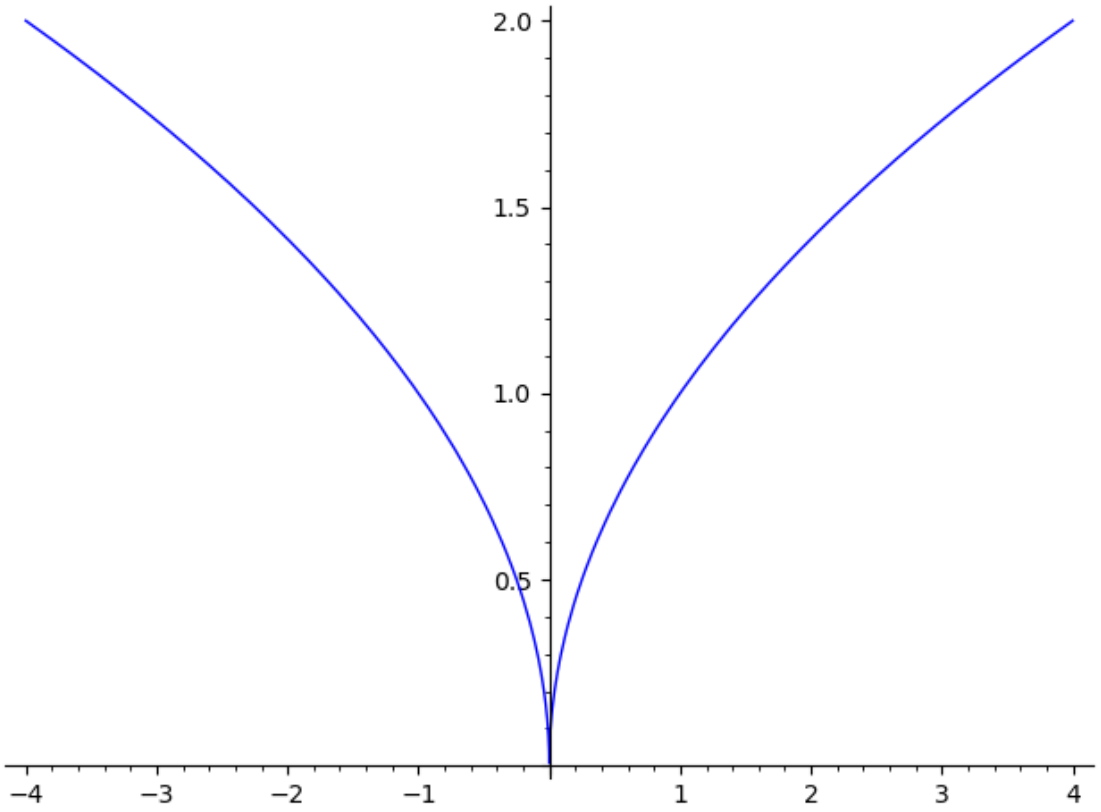
[4]:
```
# 1c
plot( 2*sin(x)*cos(x), -2*pi, 2*pi )
```

[4]:



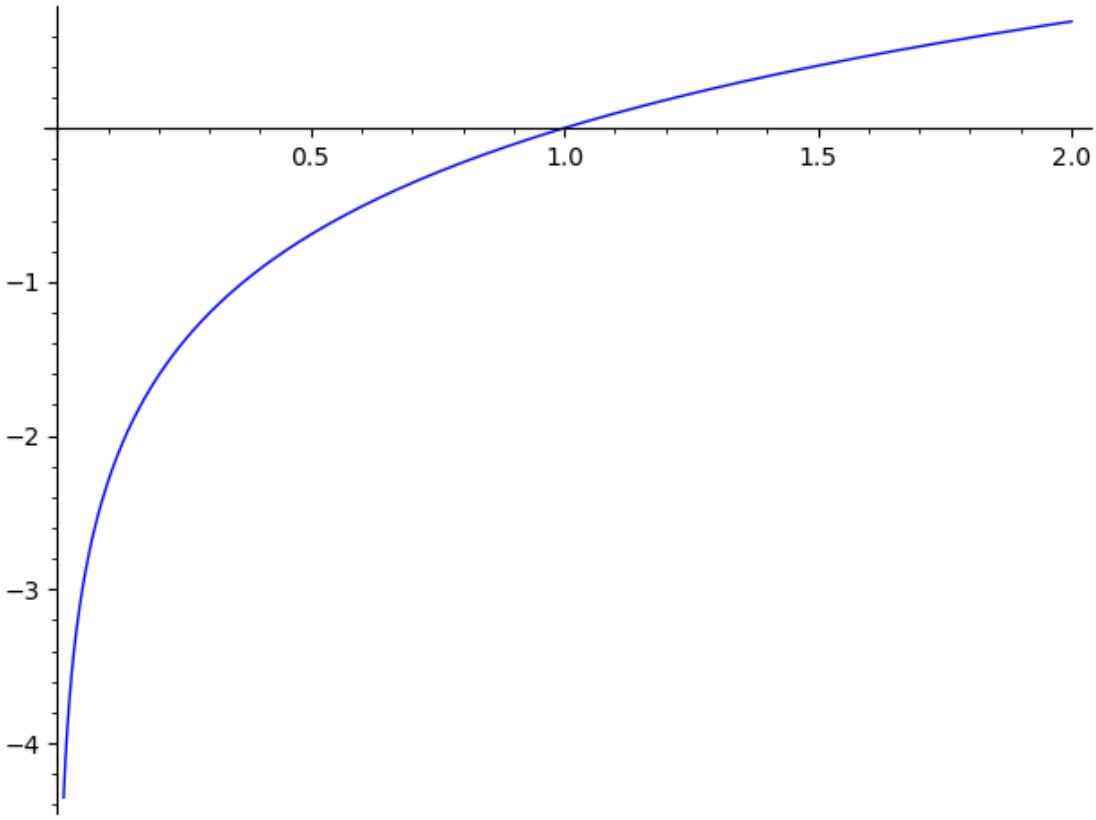
[5]:
```
# 1d
plot( sqrt( abs(x) ), -4, 4 )
```

[5]:



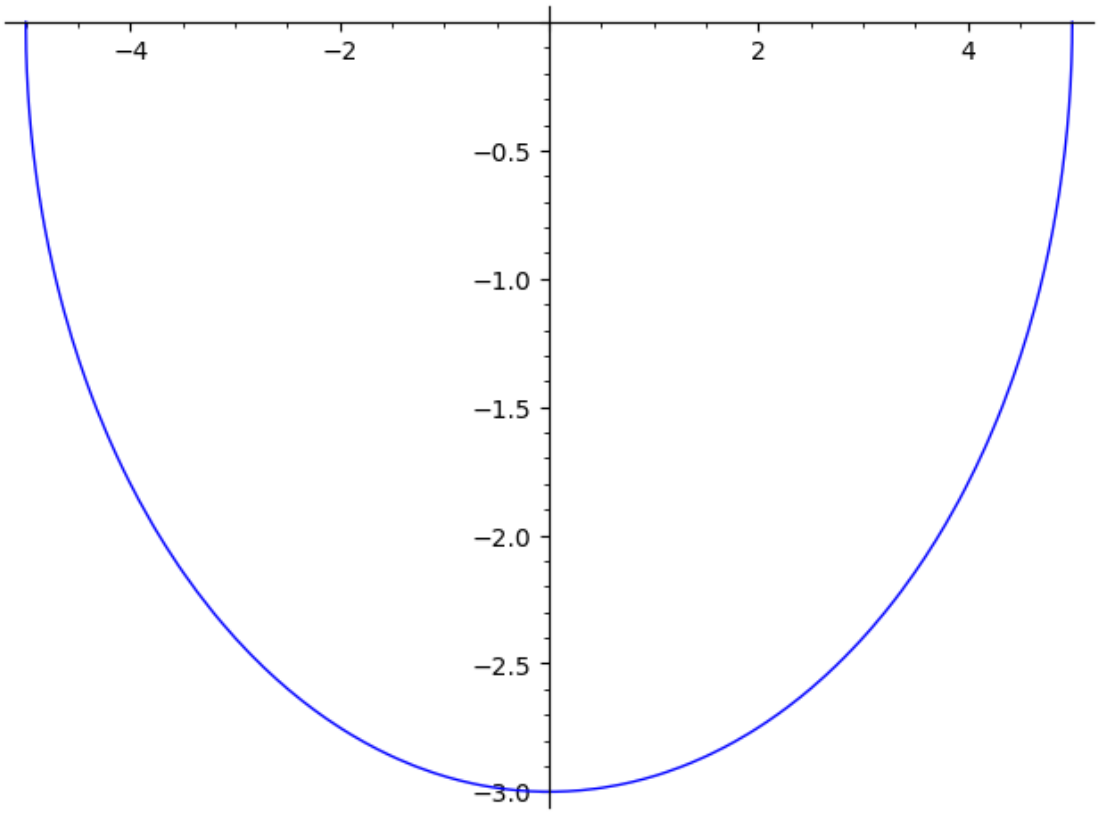
[6]:
```
# 1e
plot( log(x), 0, 2 )
```

[6]:

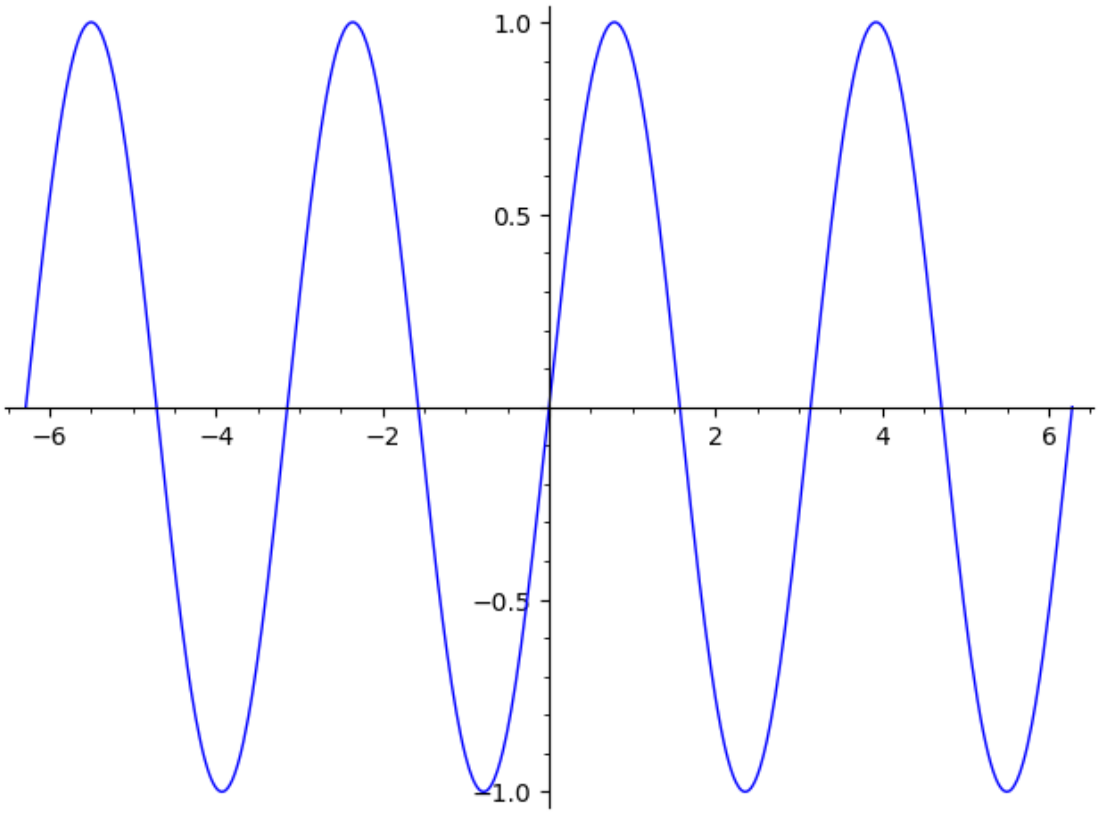


[7]:
```
# 1f
plot( -3/5*sqrt( 25-x^2 ), -5, 5 )
```

[7]:

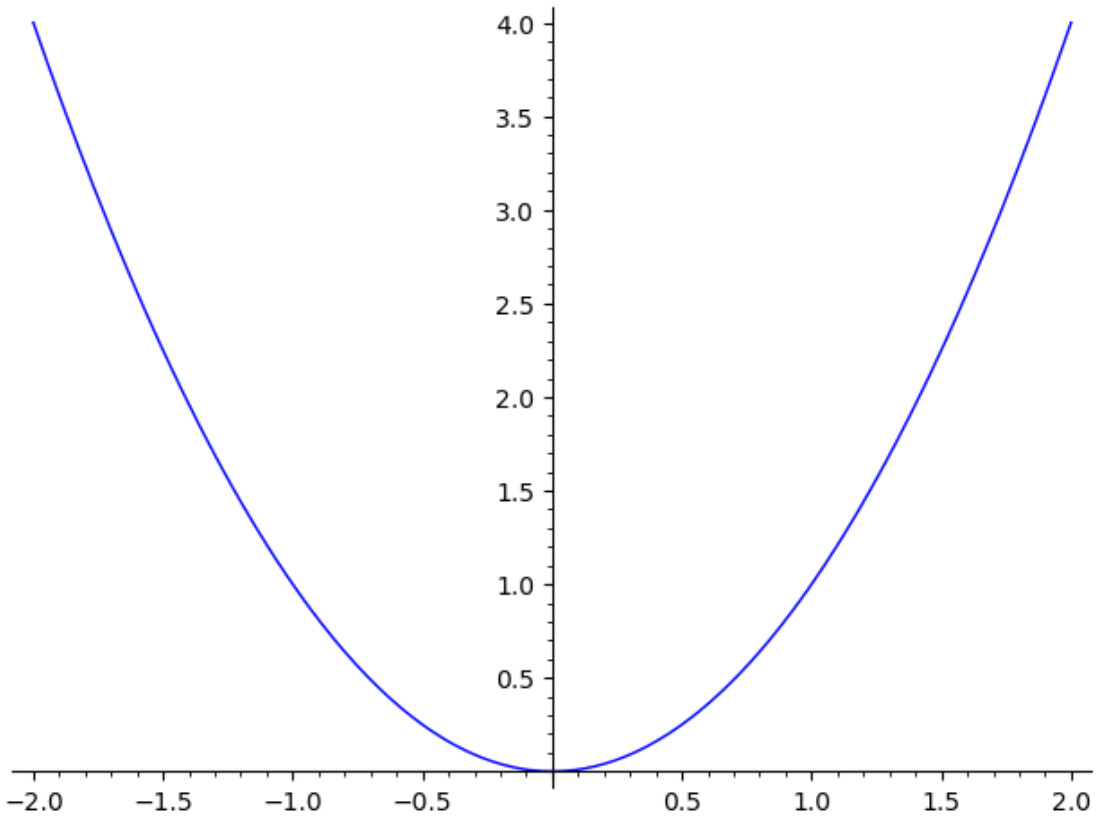


[8]:
```
# 1g
plot( cos( 2*(x-pi/4) ), -2*pi, 2*pi )
```
[8]:



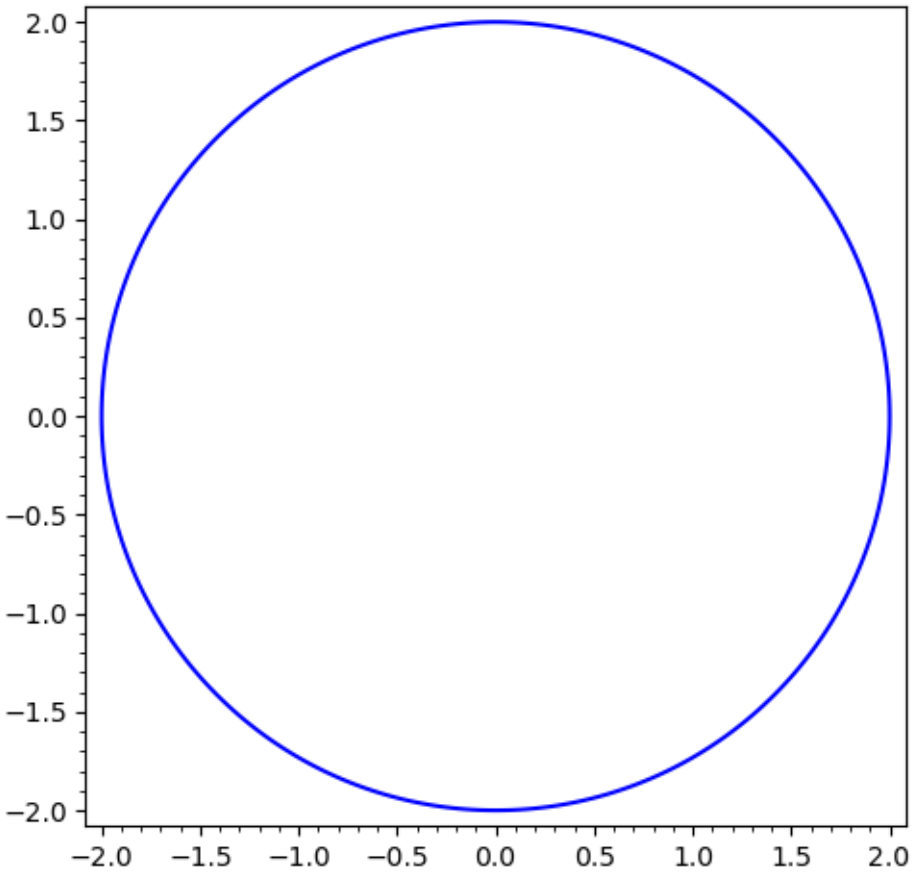
[9]:
```
# 1h
plot( x^2, -2, 2 )
```

[9]:



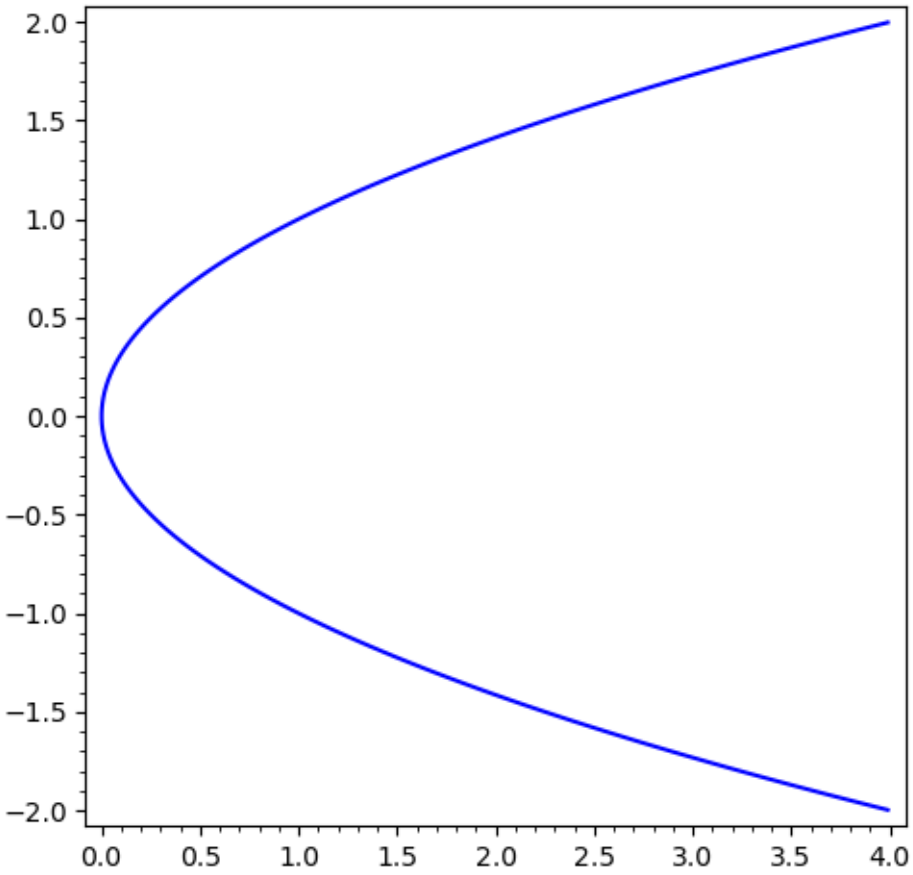
[10]:
```
var('y')
# 2a
implicit_plot( x^2 + y^2 == 4, (x,-2,2), (y,-2,2) )
```

[10]:



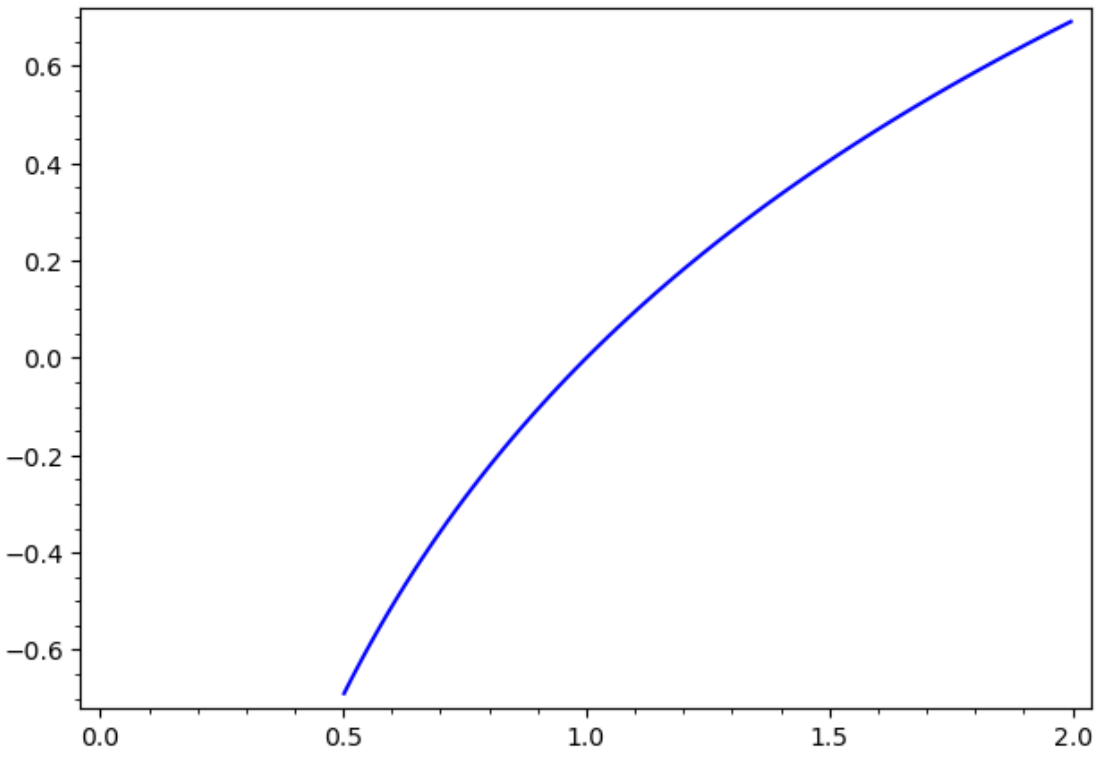
[11]:
```
# 2b
implicit_plot( x == y^2, (x,0,4), (y,-2,2) )
```

[11]:



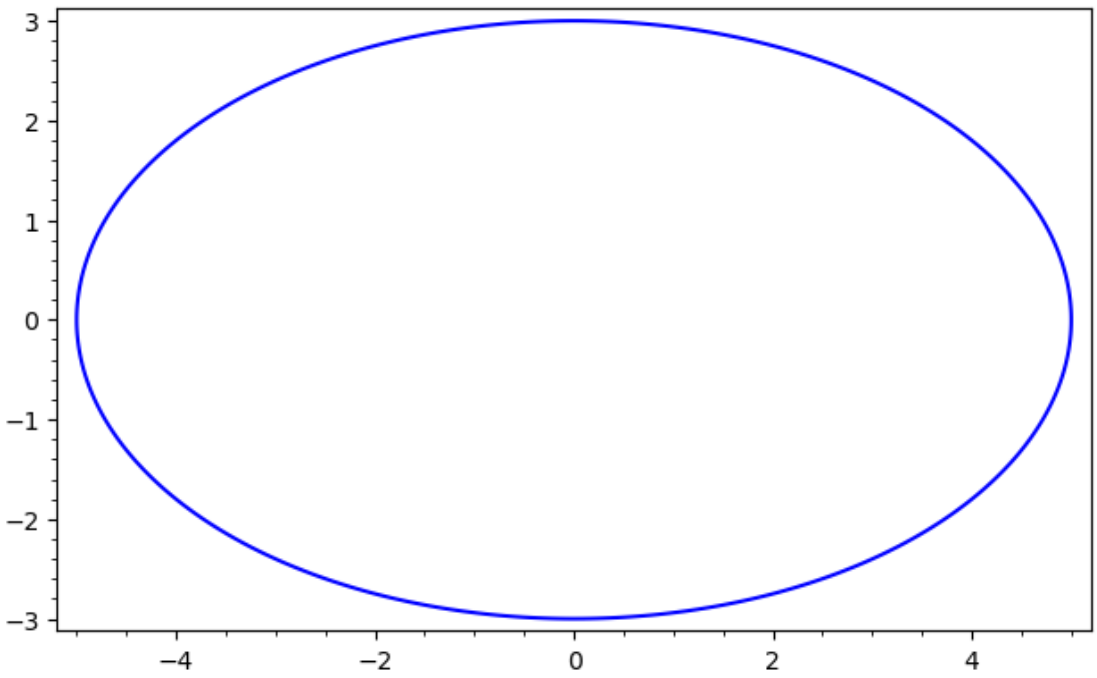
[12]:
```
# 2c
implicit_plot( x == exp(y), (x,0,2), (y,-log(2),log(2)) )
```

[12]:



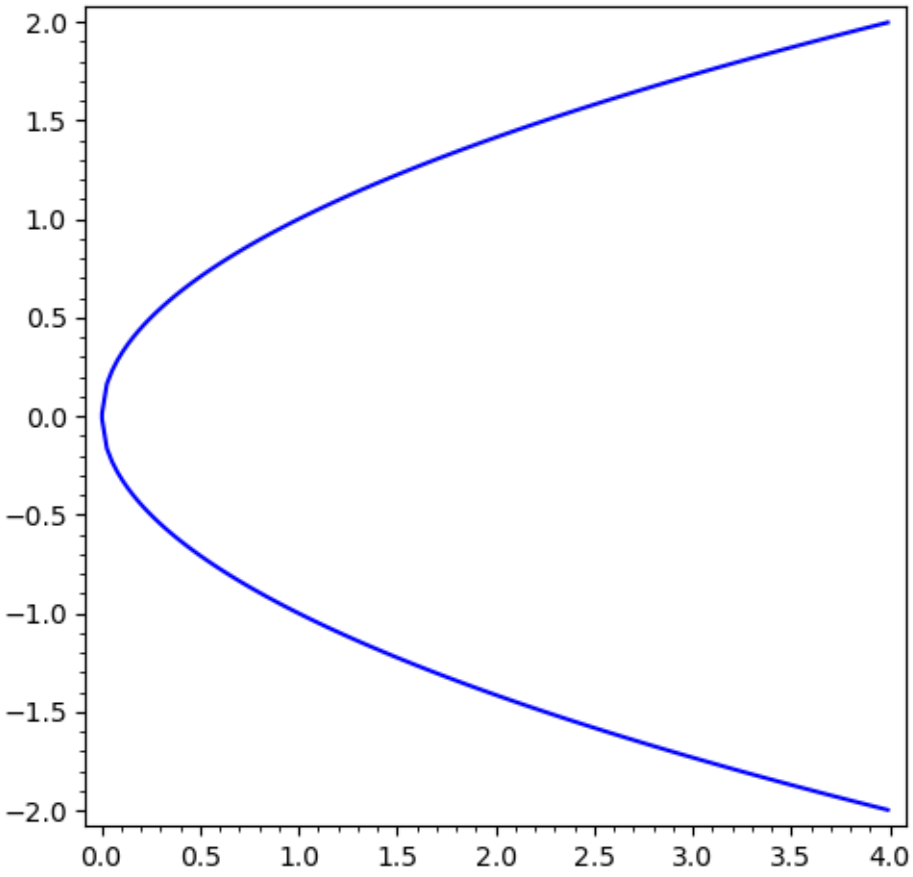
[13]:
```
# 2d
implicit_plot( x^2/5^2 + y^2/3^2 == 1, (x,-5,5), (y,-3,3) )
```

[13]:



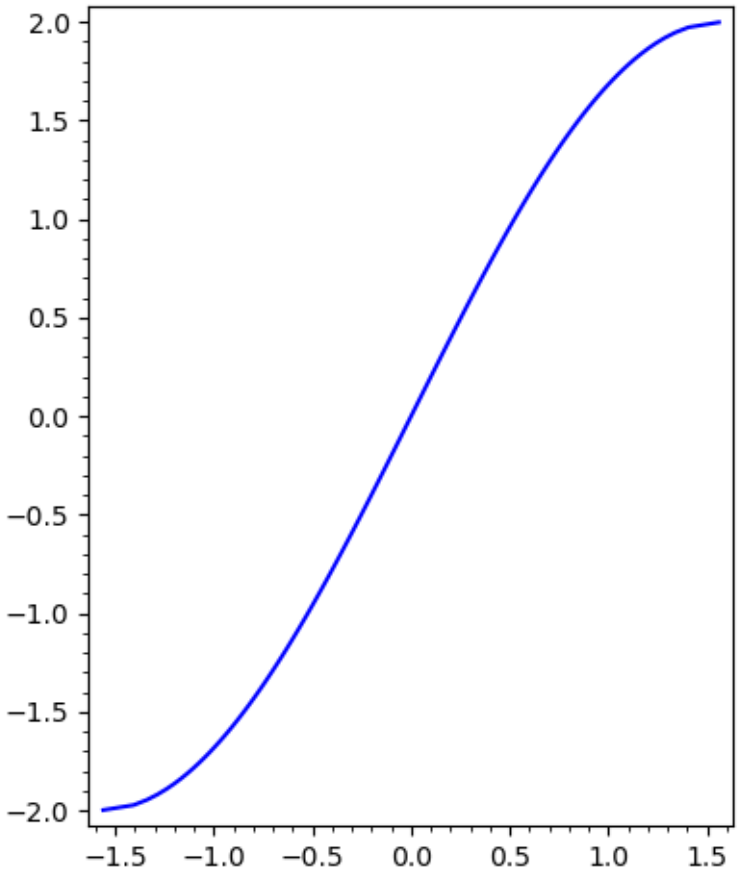
[14]:
```
# 2e
implicit_plot( abs(y) == sqrt(x), (x,0,4), (y,-2,2) )
```

[14]:



[15]:
```
# 2f
implicit_plot( x == arcsin(y/2), (x,-pi/2,pi/2), (y,-2,2) )
```

[15]:



[16]:
```
# 3
#
# Note that when we say a curve is part of,  or is the same curve,  as another
# curve,  we mean this as collections of points in the Cartesian plane.
#
# There are two cases where the plots are of the same curves:
# 1c and 1g are the same curve,  and 2b and 2e are the same curve.
#
# There are several additional cases where the plot is of a curve that is part
# of the curve in another plot:
# 1a is part of 1d,  1a is part of 2b,  and 1a is also part of 2e;
# 1b is part of 2a;
# 1f is part of 2d;
# 2c is part of 1e.
```