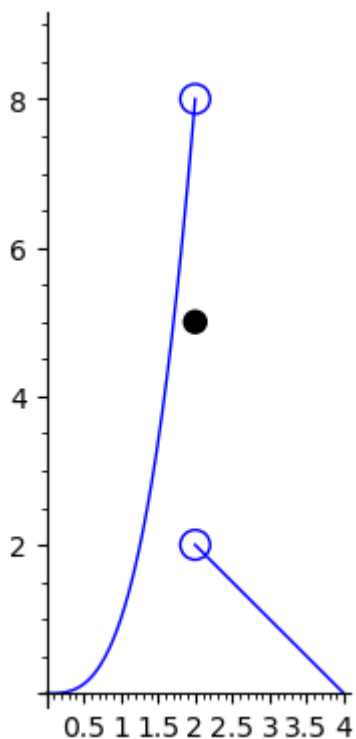In [1]:

```
f = piecewise( [ [(0,2),x^3],[[2,2],5], [(2,4),4-x] ] )
p1= plot( x^3, 0, 2 )
p2= plot( 4-x, 2, 4 )
pt1 = circle((2,8), 0.2)
pt2 = circle((2,2), 0.2)
pt3 = point((2,5), rgbcolor='black', pointsize=80)
(p1 + p2 + pt1 + pt2 + pt3).show(xmin=0, xmax=4, ymin=0, ymax=9)
```

Out[1]:

In [2]:

```
f(2)
```

Out[2]:

5

In [3]:

```
# alternatively, we can use unit_step function
# but we CANNOT define a separate point g(2)=5 using this way
g(x)=x^3*(unit_step(x)-unit_step(x-2)) + (4-x)*(unit_step(x-2)-unit_step(x-4))
#but we can take limit of g(x) at x=2 from positive or negative side
# g is a right-continuous function
```

In [4]:

```
limit(g(x),x=2,dir='+')
```

Out[4]:

2

In [5]:

```
limit(g(x),x=2,dir='-')
```

Out[5]:

8

In [6]:

```
# since g is right-continuous, g(2)=2
g(2)
```

Out[6]:

2

In [0]: