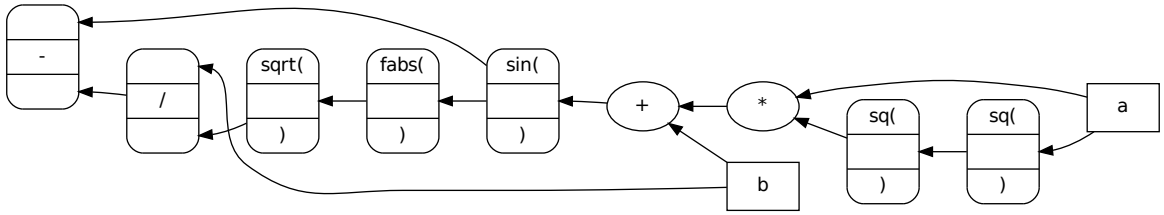
```
0  #
1  #
2  #
3  #
4  #
5  #
6  #
7  from casadi import *
8  from casadi.tools import *
```

An SX graph

```
13 a = SX.sym("a")
14 b = SX.sym("b")
15
16 c = sin(a**5 + b)
17
18 c = c - b/ sqrt(fabs(c))
19 print c
```

```
@1=sin(((a*sq(sq(a)))+b)), (@1-(b/sqrt(fabs(@1))))
```

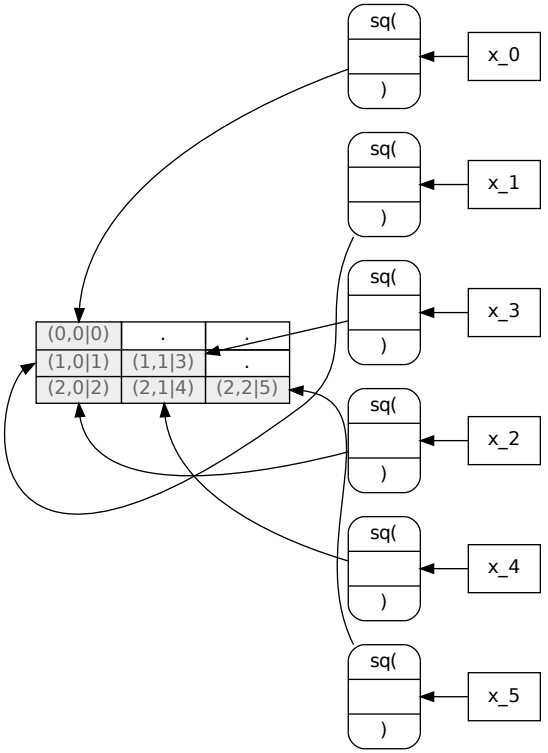
```
21
22 dotdraw(c)
```



An SX

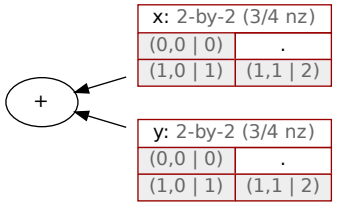
```
25
26 dotdraw(SX.sym("x",Sparsity.lower(3)))
```


```
27
28 dotdraw(SX.sym("x",Sparsity.lower(3))**2)
```



An MX graph

```
30 x = MX.sym("x",Sparsity.lower(2))
31 y = MX.sym("y",Sparsity.lower(2))
32
33 z = MX.sym("z",4,2)
34
35 zz = x+y
36
37 dotdraw(zz)
```




```
39
40 f = Function("magic", [z,y],[z+x[0,0],x-y])
41
42 z,z2 = f(vertcat(x,y),zz.T)
43
44 z = z[:2,:] +x + cos(x) - sin(x) / tan(z2)
45
46 dotdraw(z)
```