

# SXFunction\_constr\_py

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This file is part of CasADi.

CasADi -- A symbolic framework for dynamic optimization.  
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## 1 Function constructors

```
[1]: from casadi import *
```

```
[2]: x = SX.sym("x")      # A scalar (1-by-1 matrix) symbolic primitive  
     y = SX.sym("y",2)    # A vector (n-by-1 matrix) symbolic primitive  
     z = SX.sym("z",2,3)  # An n-by-m matrix symbolic primitive
```

```
[3]: ins = [x,y] # function inputs  
     outs = [x,y,vertcat(x,y),y*x,0]
```

```
[4]: print(outs)
```

```
[SX(x), SX([y_0, y_1]), SX([x, y_0, y_1]), SX([(y_0*x), (y_1*x)]), 0]
```

```
[5]: f = Function("f", ins, outs)
```

f now has two inputs and a 4 outputs:

```
[6]: print(f.n_in())  
      print(f.n_out())
```

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5

The outputs has the following string representation. Note how all elements of out have been converted to SX by automatic typecasting functionality

```
[7]: f_out = f(*f.sx_in())  
      for i in range(3):  
          print(f_out[i])
```

x

[y\_0, y\_1]

[x, y\_0, y\_1]