In [1]:
```
import cvxpy as cp
```

In [5]:
```
x = cp.Variable()
y = cp.Variable()
constr = [2*x+y >=1, x+3*y >=1, x>=0, y>=0]
```

In [14]:
```
obj1 = cp.Minimize(x + y)
prob1 = cp.Problem(obj1, constr)
prob1.solve()
print("optimal value", prob1.value)
print("optimal var", x.value, y.value)
```

```
optimal value 0.6000000001640435
optimal var 0.4000000000142378 0.20000000014980568
```

In [15]:
```
obj2 = cp.Minimize(-x-y)
prob2 = cp.Problem(obj2, constr)
prob2.solve()
print("optimal value", prob2.value)
print("optimal var", x.value, y.value)
```

```
optimal value -inf
optimal var None None
```

In [16]:
```
obj3 = cp.Minimize(x)
prob3 = cp.Problem(obj3, constr)
prob3.solve()
print("optimal value", prob3.value)
print("optimal var", x.value, y.value)
```

```
optimal value -1.95729336465049e-11
optimal var -1.95729336465049e-11 1.6915974374433624
```

In [17]:
```
obj4 = cp.Minimize(cp.maximum(x, y))
prob4 = cp.Problem(obj4, constr)
prob4.solve()
print("optimal value", prob4.value)
print("optimal var", x.value, y.value)
```

```
optimal value 0.3333333337083394
optimal var 0.3333333337083394 0.3333333316865374
```

In [18]:
```
obj5 = cp.Minimize(x**2 + 9*y**2)
prob5 = cp.Problem(obj5, constr)
prob5.solve()
print("optimal value", prob5.value)
print("optimal var", x.value, y.value)
```

```
optimal value 0.5000000000000002
optimal var 0.5000000000000001 0.1666666666666667
```