In [1]:

```python
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```
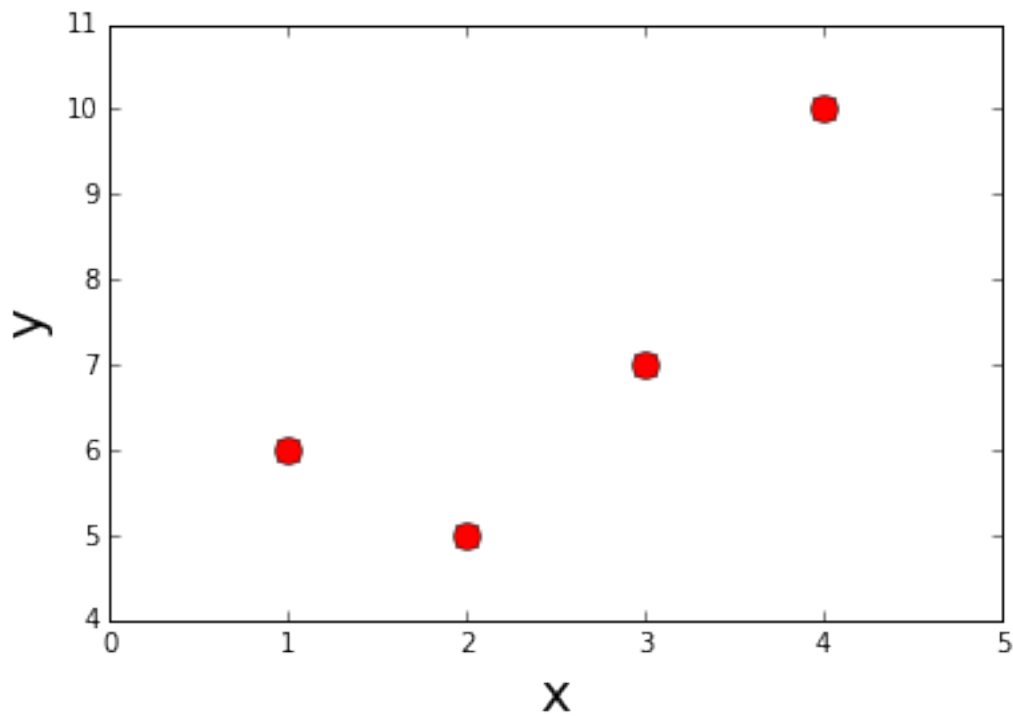
In [8]:

```python
data = np.array([[1,6],[2,5],[3,7],[4,10]])
x = data[:,0]
y = data[:,1]
```

In [14]:

```python
plt.plot(x, y, 'ro', ms=10, clip_on=False)
plt.axis([0,5,4,11])
plt.xlabel('x', fontsize=20)
plt.ylabel('y', fontsize=20)
```

Out[14]:

```
<matplotlib.text.Text at 0x10603e160>
```


In [15]:

```python
A = np.ones((4,2))
A[:,1] = x
```

In [24]:

```python
c = np.linalg.solve(A.T.dot(A), A.T.dot(y))
```
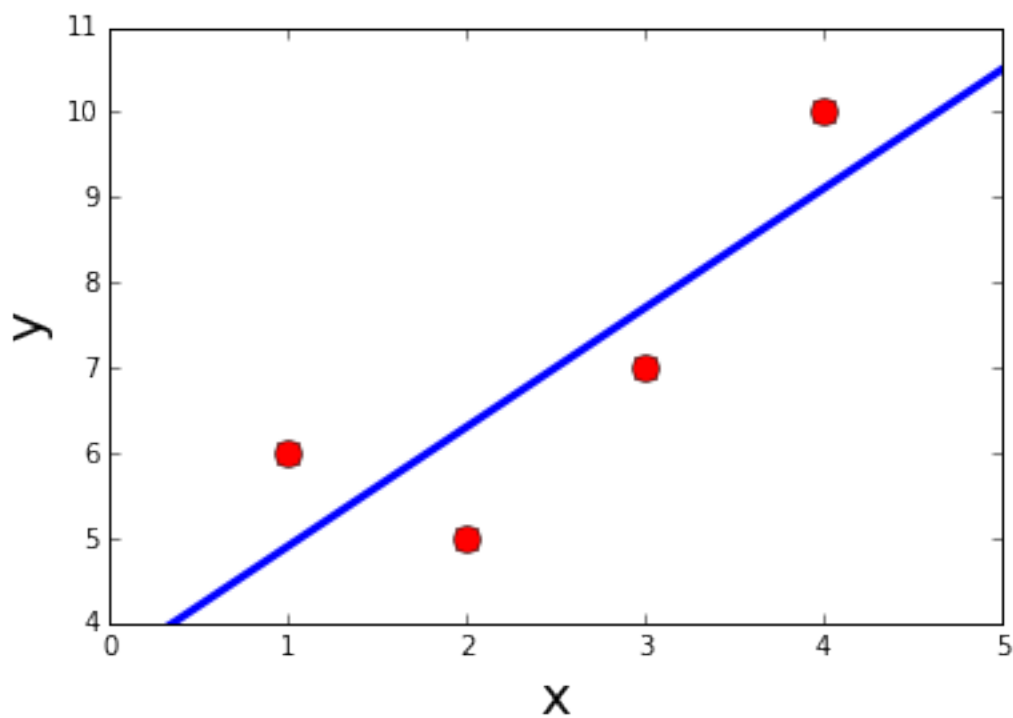
In [29]:

```python
t = np.linspace(0,5,100)
error = y -  (c[0] + x * c[1])
```

In [34]:

```python
plt.plot(x, y, 'ro', ms=10, clip_on=False)
plt.plot(t, c[0] + t * c[1], 'b-', lw=3)
plt.axis([0,5,4,11])
plt.xlabel('x', fontsize=20)
plt.ylabel('y', fontsize=20)
```

Out[34]:

```
<matplotlib.text.Text at 0x106548908>
```


In [36]:

```python
A = np.zeros((4,3))
A[:,0] = x**0
A[:,1] = x**1
A[:,2] = x**2
```

In [37]:

```python
c = np.linalg.solve(A.T.dot(A), A.T.dot(y))
```
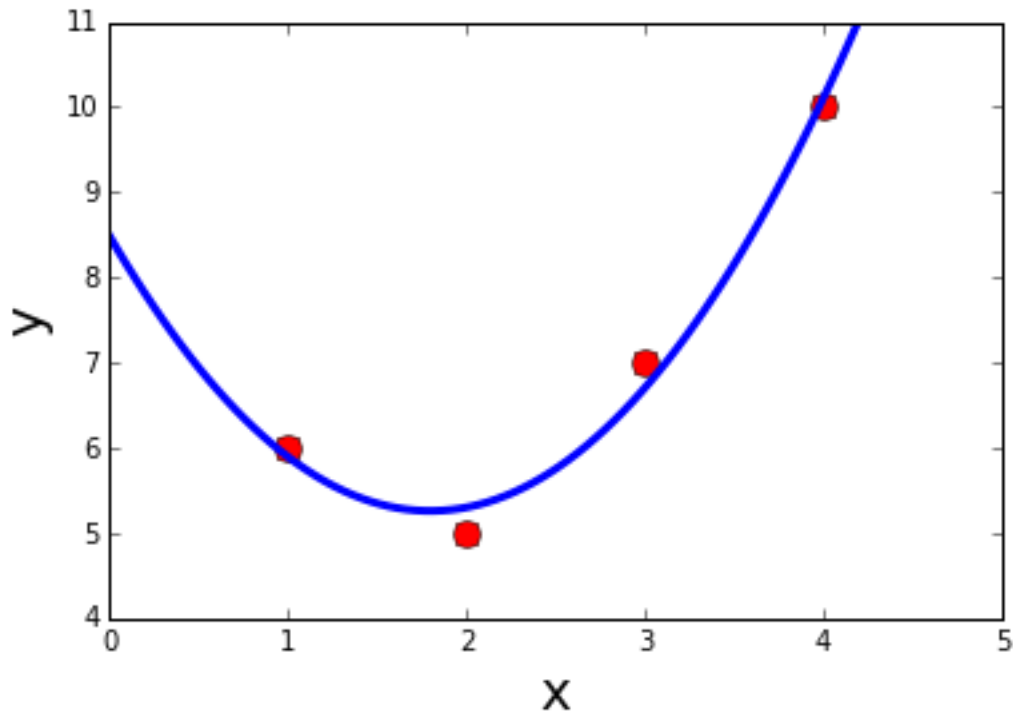
In [38]:

```python
t = np.linspace(0,5,100)
error = y -  (c[0] + x * c[1])
```

In [39]:

```
plt.plot(x, y, 'ro', ms=10, clip_on=False)
plt.plot(t, c[0] + t * c[1] + t**2 * c[2], 'b-', lw=3)
plt.axis([0,5,4,11])
plt.xlabel('x', fontsize=20)
plt.ylabel('y', fontsize=20)
```

Out[39]:

```
<matplotlib.text.Text at 0x106c98898>
```


In [ ]: