In [6]:
```
def mean_num_friends(x):
    sum = 0
    for i in x:
        sum = sum + i
    return sum/len(x)

def median_num_friends(x):
    x.sort()
    mid = round(len(x)/2)
    if(len(x) % 2 == 0):
        return (x[mid] + x[mid-1])/2
    else:
        return (x[mid-1])

num_friends=[100, 49, 41, 40, 25, 10, 5, 4, 7, 20, 60]

print("mean={}".format(mean_num_friends(num_friends)))

print("median={}".format(median_num_friends(num_friends)))
```

```
mean=32.81818181818182
median=25
```

In [23]:
```
def normal_pdf(x, mu=0, sigma=1):
    import math
    mean =  mean_num_friends(num_friends)
    med = median_num_friends(num_friends)
    var = pow(x - mean,2)/(len(num_friends)-1)
    return (1/math.sqrt(2*math.pi*var))*math.exp(-pow(x-mu,2)/(2*var))

from matplotlib import pyplot as plt
xs = [x / 10.0 for x in range(-50, 50)]
plt.plot(xs, [normal_pdf(x, sigma=1) for x in xs], '-', label='mu=0,sigma=1')
plt.plot(xs, [normal_pdf(x, sigma=2) for x in xs], '-', label='mu=0,sigma=2')
plt.plot(xs, [normal_pdf(x, sigma=0.5) for x in xs], '-', label='mu=0,sigma=0.5')
plt.plot(xs, [normal_pdf(x, sigma=-1) for x in xs], '-', label='mu=0,sigma=-1')
plt.legend()
plt.show()
```