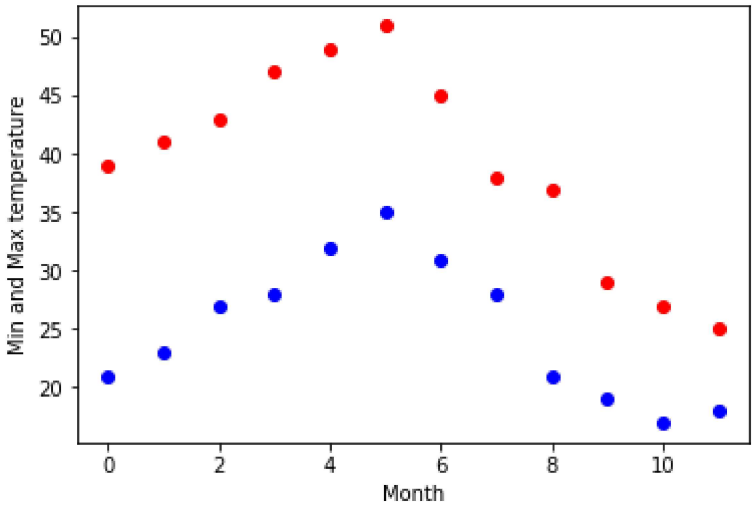
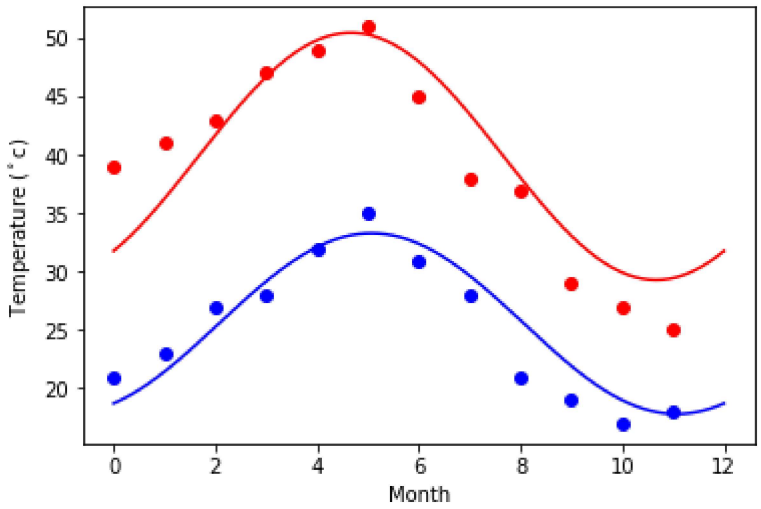
In [2]:
```
import numpy as np

temp_max = np.array([39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25])

temp_min = np.array([21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18])

import matplotlib.pyplot as plt

months = np.arange(12)
plt.plot(months, temp_max, 'ro')
plt.plot(months, temp_min, 'bo')
plt.xlabel('Month')
plt.ylabel('Min and Max temperature')
```

Out[2]:
```
Text(0,0.5,'Min and Max temperature')
```



In [5]:
```
# Fitting it to the periodic function

from scipy import optimize
def yearly_temps(times, avg, ampl, time_offset):
    return (avg + ampl * np.cos((times + time_offset) * 2 * np.pi / times.max()))

res_max, cov_max = optimize.curve_fit(yearly_temps, months, temp_max, [20, 10, 0]
res_min, cov_min = optimize.curve_fit(yearly_temps, months, temp_min, [-40, 20, 0
```

In [6]:
```
# Plot the fit

days = np.linspace(0, 12, num=365)

plt.figure()
plt.plot(months, temp_max, 'ro')
plt.plot(days, yearly_temps(days, *res_max), 'r-')
plt.plot(months, temp_min, 'bo')
plt.plot(days, yearly_temps(days, *res_min), 'b-')
plt.xlabel('Month')
plt.ylabel('Temperature ($^\circ$c)')

plt.show()
```



In [ ]: