Consider the following data:

x:	1	2	3	4	5	6	7	8	9	10	11	12
y:	26	31	26	16	9	12	23	31	29	19	10	10

1. Fit the best (least-square) quartic (4^{rh} degree) polynomial, and display the result in a graph (both the polynomial and the original points). Also, compute the typical error of this fit. It is up to you whether you want to utilize the symmetry of the x values.

2. Adding, to the previous data, an extra row of the following weights:

w:	12	7	4	9	3	8	6	7	10	11	7	5

   find the weighted least-square *cubic* polynomial. Plot the result (polynomial and x-y points), and compute the *weighted* sum of squares of the corresponding residuals.

3. To the original data (no weights), fit the following linear model:

$$y \simeq a + b\ \cos x + c\ \sin x$$

   Plot the result, and compute the *individual* residuals. Note: when evaluating the sin and cos functions, make sure that *decimal* answers are returned, by using $\sin(x*1.0)$ and $\cos(x*1.0)$ instead of $\sin(x)$ and $\sin(x)$.