In this problem, you will gain intuition for how uncertainty propagates from data space into parameter space and then into data space once again.

For this problem you will need tpoints.txt and fpoints.txt.

(a) Create a system matrix for this problem assuming that your basis functions are cos and sin.

(b) Adopt the  $l_2$  norm of the error as your notion of best and produce a cost contour for the model. You should get concentric ellipses.

(c) Select a contour near the minimum. Generate a plot that shows the data points, your best fit model, and the models on the contour.

(d) Pick two models on the contour and plot them using a different color. Notice how they cross the best fitting model at different points.

(e) Explain how this exercise demonstrates uncertainty propogation.