2.

a) p(x) and f(x) are very similar on [1,2], with basically no error.

b) Similarly to in part (a), p(x) and f(x) are very very similar on [1,2] with basically no error.

c) Summing the 2nd and 4th indices of c to get the coefficient for x^2 and summing the 3rd and 4th indices to get the coefficient for x, we see that the least squares solution is consistent with that of part (b). The plots of p(x) and f(x) are essentially the same on [1,2].

d) EIG and EIG1 are identical. EIG is also identical to the square of the singular values matrix of A from part (b).