Numerical Analysis Homework 5 Programming Report

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Problem A

Using normal equations, we obtain

$$\widehat{\varphi} = -0.238444x^2 + 2.67041x + 2.17572$$

Problem B

Using QR factorization, we obtain

$$\widehat{\varphi} = -0.238444x^2 + 2.67041x + 2.17572$$

Based on the 2-norm, the condition numbers are :

$$cond_G = 18980.9 \qquad\qquad cond_{R_1} = 137.771,$$

which verifies that the condition number of the Gram matrix is much larger than that of R_1