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MO2.9 Describe Gaussian elimination for solving linear systems of equations, including its computational complexity.

MO2.10 Describe and implement the bisection for solving a nonlinear scalar equation and Newton-Raphson methods for solving a nonlinear system of equations.

MO2.11 Describe fundamental concepts of optimization problems including: objective functions; constraints; linear versus nonlinear; discrete versus continuous; local versus global minimizers.

MO2.12 Describe the gradient descent method for optimization of single-variable and multivariable objective functions. Implement gradient descent for single- and multi-variable cases.

MO2.13 Describe basic probability concepts such as random variable; distribution in the discrete and continuous cases; moments; joint, conditional, and marginal distributions; Bayes' law.

MO2.14 Describe basic statistical estimation concepts, such as sample mean, sample standard deviation, and confidence interval.

MO2.15 Describe and implement Monte Carlo sampling for sampling distributions in the context of physical models with randomness.