Lecture 23

Wednesday, March 19, 2025 9:25 AM

Some basic analytic methods to solve an ordinary differential equation (ODE):

- 1) Separation of variables: y' = f(x)g(y)Example: $y' = x^2y$, y(1) = 0
- 2) Integrating factor: y' + p(x)y = q(x)Example: y' + y = x, y(0) = 1

Euler's method is a numerical method for ODE y' = f(x, y). A more general method based on the same idea is the *finite difference method*.

Example: $y' = x + y^2$, y(0) = -1