Thứ
Ngày . . No.

$$f(t+\Delta t) = f(t) + h f'(t)$$

Numerical Analysis

- Implicit: $F(t+\Delta t) = F(t) + \delta F'(t)$
- Explicit: $G(F(t+\Delta t), F(t)) = 0$

Examples

- Euler (Exp): $y_{t+1} = y_t + \delta f(t)$
- Trapezoidal: $y_{t+1} = y_t + \frac{\delta}{2}[f(t) + f(t+1)]$

How to know what model is better: Numerical Error Analysis!

Forward EA — Backward EA.

Taylor Expansion: $y_{t+1} = y_t + \underbrace{\frac{y'_t}{1}h}_{\text{Euler's Formula}} + \underbrace{\frac{y''_t}{2}h^2 + \frac{y'''_t}{6}h^3 + \dots}_{\text{Error.}}$

→ For Euler's, error term starts from h^2.
For RK4, error term starts from h^5.