

Implementing Euler's numerical method in Python

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Stated problem

Given: Differential Equation

$$f(t, T(t)) = \frac{dT}{dt} = -k(T(t) - T_{env}); \quad (1)$$

$$t_0 = 0, \quad T(t_0) = T_0. \quad (2)$$

Find:

$$T(t), \quad t \geq t_0.$$

Euler's method of numerical integration

$$\Delta x = h = 0.001 \text{ s},$$

$$t_i = t_0 + n \cdot h,$$

$$dT(t) = f(t, T(t)) \cdot dt.$$

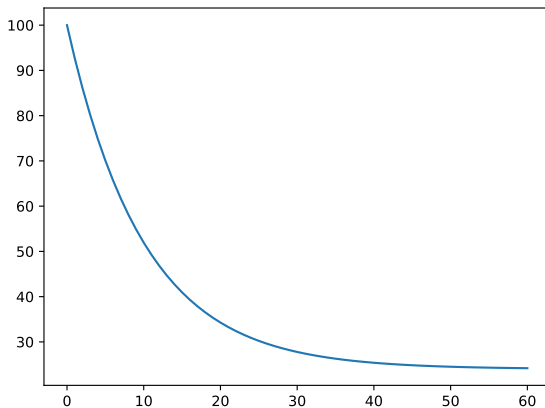
$$\Delta T(t_{i+1}) = f(t_i, T(t_i)) \cdot h,$$

$$T(0) = T_{env}, \quad t_0 = 0.$$

Program outline

TODO: Add program outline with comments

Result of the modeling



Conclusion

We have implemented a program realizing Euler's method of numerical solution of the kettle problem...

Further directions see at the following address:

`http://edu.irnok.net/doku.php?id=euler:start`