演習：オイラー法の誤差

$$\frac{dx}{dt} = f = 2t + 3x$$

初期条件　$x(t=0)=1$　　$h = 0.1$

$$\Rightarrow x_{n+1} \simeq x_n + hf\left(t_n, x_n\right) \qquad x_n \equiv x\left(t_n\right)$$

$$x_0 = x(t=0) = 1$$

$$x_1 = x(t=0.1) = x_0 + hf_0 = 1 + 0.1 \times \left(2 \times 0 + 3 \times 1\right) = 1.3$$

$$x_2 = x(t=0.2) = x_1 + hf_1 = 1.3 + 0.1 \times \left(2 \times 0.1 + 3 \times 1.3\right) = 1.71$$

$$x_3 = x(t=0.3) = x_2 + hf_2 = 1.71 + 0.1 \times \left(2 \times 0.2 + 3 \times 1.71\right) = 2.263$$

厳密解は2.58395936

⇩

相対誤差は約0.124