

Procedure Euler ( $x, T, N, \sigma, \gamma, \text{type}, K$ )

$$\delta \leftarrow T/N ; x_0^\delta \leftarrow x$$

for  $i = 0, \dots, N-1$  do

$$t_{i+1} \leftarrow t_i + \delta$$

$$Z \leftarrow \mathcal{N}(0,1)$$

$$S_{t_{i+1}}^\delta \leftarrow S_{t_i}^\delta + \mu(S_{t_i}^\delta) \delta + \sigma(S_{t_i}^\delta) \sqrt{\delta} Z$$

$$\text{Price} = \max(0, S_{t_N}^\delta - K)$$

here  $\mu(S_t) = 0.03 S_t$

$$\sigma(S_t) = \sigma S_t^\gamma$$

$$x = S_0 = 100$$