$$\boldsymbol{C_{out,i+1} = C_{out,i} + \frac{C_{3,i} - C_{out,i}}{\tau \prod_{i=1}^{3} (1 - \alpha_i)} \, \Delta t}$$

$$\nu \, C_3 = \nu \, C_{out} + \frac{\mathrm{d}C_{out}}{\mathrm{d}t} \, V \prod_{i=1}^{3} (1 - \alpha_i) \implies$$

$$\implies C_3 = C_{out} + \frac{\mathrm{d}C_{out}}{\mathrm{d}t} \, \tau \prod_{i=1}^{3} (1 - \alpha_i) \implies$$

$$\implies \frac{\mathrm{d}C_{out}}{\mathrm{d}t} = \frac{C_3 - C_{out}}{\tau \prod_{i=1}^{3} (1 - \alpha_i)} \implies$$

$$\implies \frac{\Delta C_{out}}{\Delta t} = \frac{C_{out,i+1} - C_{out,i}}{\Delta t} = \frac{C_{3,i} - C_{out,i}}{\tau \prod_{i=1}^{3} (1 - \alpha_i)} \implies$$

$$\implies C_{out,i+1} = C_{out,i} + \frac{C_{3,i} - C_{out,i}}{\tau \prod_{i=1}^{3} (1 - \alpha_i)} \, \Delta t$$