Python 02 Challenge!

(a) The previous challenge implemented the 3rd-order Adams-Bashforth algorithm on the ODE

$$\frac{\mathrm{d}u}{\mathrm{d}t} = au, \quad u(0) = 1.0, \quad u : [0, 1] \mapsto \mathbb{R}$$

Write a function `ab3(f, u0, t0, tT, N)` that solves an ODE

$$\frac{\mathrm{d}u}{\mathrm{d}t} = f(u), \quad u(0) = u_0, \quad u : [t_0, t_T] \mapsto \mathbb{R}$$

using the 3rd-order Adams-Bashforth discretisation. (`u0` is a tuple with the first 3 values.)

(b) The greatest common divisor of two integers can be computed using Euclid's algorithm:

$$\gcd(a, b) = \begin{cases} a, & \text{if } b = 0 \\ \gcd(b, a \bmod b), & \text{otherwise} \end{cases}$$

Implement a function `gcd(a, b)`.