HOMEWORK 3
Math 104 - Dr. Evans
UCSD Winter 2004
Due Thursday, January 22, 5:00PM

1. Let a and b be two positive integers. Suppose repeated applications of the Euclidean algorithm results in the following set of equations:

$$\begin{aligned} a &= b \cdot q_1 + r_1 & 0 < r_1 < b \\ b &= r_1 \cdot q_2 + r_2 & 0 < r_2 < r_1 \\ r_1 &= r_2 \cdot q_3 + r_3 & 0 < r_3 < r_2 \\ r_2 &= r_3 \cdot q_4 + r_4 & 0 < r_4 < r_3 \\ r_3 &= r_4 \cdot q_5 + 0 \end{aligned}$$

   Prove that r_4 is the greatest common divisor of a and b.