

Number Theory
Problem Set 1
The Division Algorithm

1. Find (a, b) for each pair using the Euclidean algorithm. Then solve the equations backward to find x and y such that $ax + by = (a, b)$.
 - (a) $a = 217, b = 341$
Answer. $x = -3, y = 2$.
 - (b) $a = 165, b = 465$
Answer. $x = -14, y = 5$.
 - (c) $a = 123, b = 76$
Answer. $x = -21, y = 34$.
 - (d) $a = -899, b = 2030$
Answer. $x = 9, y = 4$.