

MORE EXERCISES RELATED TO history03.pdf

6. Use the Euclidean Algorithm to find the greatest common divisor for the following pairs of integers:

(a) 662 and 414.

(b) 277 and 123.

(c) 201 and 111.

(d) 5040 and 1001.

(e) 9998 and 6060.

(f) 14039 and 1529.

(g) 54321 and 12345.

(h) 111111 and 11111.

7. If k is a positive integer, show that the following pairs of integers (m, n) are relatively prime by exhibiting an expression of the form $1 = pm + qn$ (where p and q are integers), and explain why the existence of such an expression implies that the greatest common divisor of the two numbers is 1.

(a) $m = 2k + 1$ and $n = 2k + 3$.

(b) $m = 2k + 1$ and $n = 2k + 5$.

8. Give an example to show that the conclusion in the preceding exercise is not necessarily true for integer pairs of the form $m = 2k + 1$ and $n = 2k + 7$.