1 By using the Euclidean algorithm find the greatest common divisor of
   (a) 7469 and 2464
   (b) 2689 and 4001.

2 Find the g.c.d g of the numbers 1819 and 3587, then find integers x and y to satisfy

$$1819x + 3587y = g$$

.

3 Find values of x and y to satisfy
   (c) $43x + 64y = 1$
   (d) $93x - 81y = 3$
   (e) $6x + 10y + 15z = 1$

4 Find the least common multiple of (a) 482 and 1687, (b) 60 and 61.

6 Prove that the product of three consecutive integers is divisible by 6; of 4 consecutive integers by 24. .

11 Prove that 4 does not divide $n^2 + 2$ for any integer n.

13 Prove that $n^2 - n$ is divisible by 2 for every integer n; that $n^3 - n$ is divisible by 6; that $n^5 - n$ is divisible by 30.

14 Prove that if n is odd then $n^2 - 1$ is divisible by 8.

27 Find positive integers a and b such that $(a, b) = 10$ and the least common multiple of a and b is 100. Find all solutions.

53 Show that $(n! + 1, (n + 1)! + 1) = 1$.