- 1. Using Euclidean Algorithm find integers  $\alpha$  and  $\beta$  such that  $gcd(18, 127) = \alpha \cdot 18 + \beta \cdot 127$ .
- 2. Using Euclidean Algorithm find integers  $\alpha$  and  $\beta$  such that  $\gcd(33,251) = \alpha \cdot 33 + \beta \cdot 251$ .
- 3. Prove, that 5n + 3 and 7n + 4 are relatively prime for any positive n.
- **4.** Find primes p, q if  $n = p \cdot q = 414847$  and  $\phi(n) = 413280$ .
- 5. Find an integer a such that  $a \equiv 4 \pmod{6}$  and  $a \equiv 5 \pmod{35}$ .
- $\mathscr{S}$ . Find an integer a such that  $a \equiv 4 \pmod{7}$  and  $a \equiv 1 \pmod{19}$ .
- 7. Find an integer a such that  $a \equiv 38 \pmod{103}$  and  $a \equiv 81 \pmod{83}$ .
- 8. Find an integer a such that  $a \equiv 4 \pmod{6}$  and  $a \equiv 5 \pmod{35}$ .
- 9. Find an integer a such that  $a \equiv 4 \pmod{7}$  and  $a \equiv 1 \pmod{19}$ .
- 10. Find an integer a such that  $a \equiv 38 \pmod{91}$ ,  $a \equiv 81 \pmod{83}$  and  $a \equiv 3 \pmod{95}$ .