Exercise-set 1.
Solutions

1. a) 36,
   b) 24.

2. 250

3. a) By contradiction, using $a^n - 1 = (a-1)(a^{n-1} + a^{n-2} + \cdots + 1)$.
   b) By contradiction, using $a^n + 1 = (a+1)(a^{n-1} - a^{n-1} + \pm\cdots + 1)$, if n is odd.

4. a) true,
   b) true,
   c) true.

5. a) $m = 1, 2, 5, 10$,
   b) $m = 1, 2, 3, 6$,
   c) $m = 1, 3, 5, 15$.

6. $n = 1, 5$ (and $-1, -5$).

7. 11 (and $m = 128, 256$ or 512).

8. a) No (e.g. $n = 14$),
   b) Yes (13 is a prime divisor of 39).

9. a) 1,
   b) 1,
   c) -1,
   d) 32,
   e) 57.

10. a) 1,
    b) 99,
    c) 51,
    d) 39.