Worksheet 2: Conditional statements; divisibility

1. Decide whether the following statements are True or False; discuss why.
   
   (a) If 2 is even, then 3 is odd.
   
   (b) If $a$ is even, then $a^2$ is even.
   
   (c) 5 is even, therefore 3 is odd.
   
   (d) 5 is even implies that 25 is even.
   
   (e) If a number $a$ is even, then the number $2a + 3$ is odd.
   
   (f) For any integer $a$, the number $24a + 3$ is odd.

2. Find the set of all positive divisors of 60.

3. Prove that for any integer $n$, the number $n(n + 1)(n + 2)$ is divisible by 6.