1. **[35 points]** Find the closed form for the following series, up to the nth term. If the infinite series has a finite solution, write it down.
   (a) $1 + 4 + 7 + 10 + 13 + ...$
   (b) $a_n = 3 \cdot a_{n-1}$, $a_0 = 2$
   (c) $5 + 17 + 29 + 41 + 53 + ...$
   (d) $a_n = a_{n-1} + 4$, $a_0 = -1$
   (e) $\frac{1}{2} + \frac{1}{6} + \frac{1}{18} + \frac{1}{54} + \frac{1}{162} + ...$
   (f) -15 + -13 + -11 + -9 + -7 + ...
   (g) $\frac{1}{5} - \frac{1}{35} + \frac{1}{245} - \frac{1}{1715} + \frac{1}{12005} - ...$
2. **[5 points]** Is the Fibonacci sequence an arithmetic sequence? Explain your answer.
3. **[5 points]** Is the sequence $a_n = 2^n$ a geometric sequence? Explain your answer.
4. **[5 points]** Which of the following is true:
   (a) Functions are a subset of sequences.
   (b) Sequences are a subset of functions.
   (c) Functions are a subset of relations.
   (d) Relations are a subset of functions.
   (e) None of these are true.
5. **[10 points]** Are all linear functions bijective? Prove or disprove.
6. **[10 points]** Are all quadratic functions bijective? Prove or disprove.
7. **[10 points]** Are all polynomial functions bijective? Prove or disprove.
8. **[10 points]** Prove that the set of all odd integers is countable.