1. Consider the sequences defined by the following functions. For each one:
   
i find the first 5 terms, the 500th term, and the 1000th term of the sequence,
   
ii determine the limit of each sequence (by inspection), and
   
iii list all of the following words that correctly describe the sequence: alternating, bounded from above, bounded from below, strictly increasing, strictly decreasing, convergent, divergent

   (a) \( f(n) = \frac{n+1}{3n-1} \)
   
   (b) \( f(n) = \frac{(-1)^n}{2n} \)
   
   (c) \( a_n = -\frac{n}{4} + 3 \)
   
   (d) \( a_n = -12 \)
   
   (e) \( f(n) = (-1)^{n+1}(2n) \)

2. Find a formula for the general term \( a_n \) of each sequence, assuming that the pattern of the first few terms continues.

   (a) \( -\frac{1}{4}, \frac{2}{9}, -\frac{3}{16}, \frac{4}{25}, \ldots \)
   
   (b) \( 1, \frac{2}{3}, \frac{3}{5}, \frac{4}{7}, \frac{5}{9}, \ldots \)