31. Find the continued fraction expansions of the rational numbers \( \frac{53}{18} \) and \( \frac{115}{53} \).

32. [NZM, p.327, Problem 7.2.5] Show that if \( x = [a_0, \ldots, a_n, b] \) and \( x = [a_0, \ldots, a_n, c] \) with \( b < c \), then \( x < y \) if \( n \) is odd, and \( x > y \) is \( n \) is even.
   
   [Hint: induction!]

33. Find the continued fraction expansion of \( \sqrt{17} \), and use this to find the first five (5) convergents of \( \sqrt{17} \).

34. Repeat problem #33, for \( \sqrt{19} \).

35. [NZM, p.336, Problem 7.5.3 (sort of)] If \( \alpha < \beta < \gamma \) are irrational numbers, \( \alpha = [a_0, a_1, \ldots] \), \( \beta = [b_0, b_1, \ldots] \), \( \gamma = [c_0, c_1, \ldots, \ldots] \), and \( a_i = c_i \) for \( 0 \leq i \leq n \), then \( a_i = b_i = c_i \) for \( 0 \leq i \leq n \).
   
   [Hint: Induction! Use \( \alpha = [a_0, \ldots, a_{i-1}, a_i + x_i] \), etc. and Problem #32 to compare \( a_{i+1} = \left\lfloor \frac{1}{x_i} \right\rfloor \), etc. Note that if \( x < y \) then \( \lfloor x \rfloor \leq \lfloor y \rfloor \).]