and then describe as many patterns observed as possible. You will be amazed at the results. Since

\[ \frac{\alpha^n - \beta^n}{\alpha - \beta} = F_n, \quad \alpha^n + \beta^n = L_n, \]

and

\[ \alpha^n = \left( L_n + F_n \sqrt{5} \right)/2, \quad \beta^n = \left( L_n - F_n \sqrt{5} \right)/2, \]

for the Fibonacci sequence defined by

\[ F_1 = F_2 = 1, \quad F_n = F_{n-1} + F_{n-2} \]

and the Lucas sequence defined by

\[ L_1 = 1, \quad L_2 = 3, \quad L_n = L_{n-1} + L_{n-2}, \]

the teacher can readily check the results.

If you have found interesting uses of the Fibonacci numbers in high school teaching, you are invited to send a description to the Fibonacci Quarterly.

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Continued from page 300.

SOLUTIONS TO LINEAR RECURSION RELATIONS PROBLEMS

1. \[ T_{n+1} = 8T_n - 18T_{n-1} + 16T_{n-2} - 5T_{n-3} \]

2. \[ T_n = -\frac{5}{2} + 7 \times 2^n - (7/6) \times 3^n \]

3. \[ T_{n+1} = 4T_n - 2T_{n-1} - 3T_{n-2} \]

4. \[ T_{n+1} = 2T_n + T_{n-1} - 3T_{n-2} + T_{n-4} \]

5. \[ T_n = 12 + \frac{1}{\sqrt{13}} \left( \frac{3 + \sqrt{13}}{2} \right)^n - \frac{1}{\sqrt{13}} \left( \frac{3 - \sqrt{13}}{2} \right)^n \]

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