

Other Sequences Lesson

Rabbits, Fibonacci sequence, Fibonacci, 1,1,2,3,5,8,13, . . .

Nature and Pascal's triangle

$t_n = t_{n-2} + t_{n-1}$ Recursive formula vs explicit formula

Explicit formula for Fib: $t_n = \frac{1}{\sqrt{5}} \left(\frac{1+\sqrt{5}}{2} \right)^n - \frac{1}{\sqrt{5}} \left(\frac{1-\sqrt{5}}{2} \right)^n$

Golden Ratio: rectangle, aesthetics, spiral $r = Pa^\theta$, growth, logarithmic, equiangular

Other sequences defined recursively

1. $t_n = t_{n-1} + t_{n-2}$ $t_1 = 1$ $t_2 = 1$ Find t_8
2. $t_n = t_{n-1} + t_{n-2}$ $t_1 = 3$ $t_2 = 4$ Find t_8
3. $t_n = t_{n-1} + t_{n-2}$ $t_3 = 5$ $t_5 = -4$ Find t_1 and t_9
4. $t_n = 2t_{n-1} + t_{n-2}$ $t_4 = 0$ $t_6 = 12$ Find t_1 and t_{10}
5. $t_n = t_{n-2} - t_{n-1}$ $t_6 = 1$ $t_8 = 8$ Find t_1
6. $t_n = \frac{t_{n-1}}{t_{n-2}}$ $t_4 = 1$ $t_5 = 2$ Find t_{100}
7. $t_n = t_{n-1} + t_{n-2}$ $t_4 = 10$ $t_7 = 40$ Find t_8 and t_1