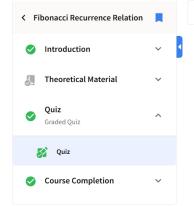
Course is completed. The course result can no longer be changed.

## **⋒ Fibonacci Recurrence Relation**

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Quiz

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Now, it's time for a short quiz to recap what you've learned. The quiz is **graded**, so you can take it only once. Each question will be followed by feedback explaining why your answer is right or wrong. If your answer is incorrect, you will see a suggestion of what you might need to refresh your memory.

Good luck!

Read the question below and select the correct answer. Then, click "Submit." What is the order of a Fibonacci recurrence relation?

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	U



**3** 



Correct: Excellent!

Submit You have used 1 of 1 attempt

Read the question below and select the correct answer. Then, click "Submit." Which of the following is the correct Fibonacci recurrence relation property for k>2?

$$\sum_{i=1}^k |f_i|^2 = f_k|^2$$

$$\sum_{i=1}^{k} |f_i|^2 = f_k + f_{k+1}$$

$$\sum_{i=1}^k |f_i|^2 = f_k|^2 + f_{k+1}$$

$$igcolumn{igcup} igcolumn{igcolumn} \sum_{i=1}^k |f_i|^2 = f_k \cdot f_{k+1}$$



Correct: Great job!

Submit You have used 1 of 1 attempt

Read the question below and select the correct answer. Then, click "Submit." What is the solution to the Fibonacci recurrence relation below?

$$a_k \ = \ a_{k-1} + a_{k-2}, \ a_1 = 1, \ a_2 = 1$$

$$\alpha = (1+\sqrt{5}) \cdot (1+\sqrt{5})^{n+1} \cdot (\sqrt{5}-1) \cdot (1-\sqrt{5})^{n+1}$$

$$\cup$$
  $u_n - (\frac{1}{2\sqrt{5}}) \cdot (\frac{1}{2}) + (\frac{1}{2\sqrt{5}}) \cdot (\frac{1}{2})$ 

$$\bigcirc \quad a_n \ = \ \left(\frac{1+\sqrt{5}}{2\sqrt{5}}\right) \cdot \left(\frac{1+\sqrt{5}}{2}\right)^n + \ \left(\frac{\sqrt{5}+1}{2\sqrt{5}}\right) \ \cdot \ \left(\frac{1-\sqrt{5}}{2}\right)^n$$

$$\bigcirc \ \ \, a_n \; = \; \left(\frac{1+\sqrt{5}}{2\sqrt{5}}\right) \cdot \left(\frac{1+\sqrt{5}}{2}\right)^{n-1} + \; \left(\frac{\sqrt{5}-1}{2\sqrt{5}}\right) \; \cdot \; \left(\frac{1-\sqrt{5}}{2}\right)^{n-1}$$

Well done!

The solutions to the Fibonacci characteristic equation  $x^2-x-1=0$  are  $x_1=\frac{1+\sqrt{5}}{2},\ x_2=\frac{1-\sqrt{5}}{2}$ . Correct: The coefficients are equal to:  $\frac{1+\sqrt{5}}{2\sqrt{5}},\ \frac{\sqrt{5}-1}{2\sqrt{5}}$ , respectively.

Submit You have used 1 of 1 attempt

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