



THIRD SPACE
LEARNING

GCSE Exam Questions

Recurrence Relation | Algebra

GCSE Exam Questions: Recurrence Relation

- 1) (a) A sequence $U_1, U_2, U_3, U_4, \dots$ is given by the recurrence relation

$$U_{n+1} = 3U_n + 2$$

$$U_1 = 2$$

Find the value of U_2, U_3, U_4 and U_5 .

(4 marks)

- 2) A sequence is defined by the recurrence relation

$$U_n = 0.9U_{n-1} + 2$$

$$U_1 = 3$$

- (a) Calculate the value of U_2 .

(2)

- (b) What is the smallest value of n for which $U_n > 10$?

(3)
(5 marks)

GCSE Exam Questions: Recurrence Relation

- 3) Find the first 5 terms of the sequence in which $U_1 = 7$ and $U_{n+1} = U_n + n$ for $n \geq 1$.

(3 marks)

GCSE Exam Questions: Recurrence Relation Answers

	Question	Answer	Marks
1)	A sequence $U_1, U_2, U_3, U_4, \dots$ is given by the recurrence relation $U_{n+1} = 3U_n + 2$ $U_1 = 2$ Find the value of U_2, U_3, U_4 and U_5.	$U_2 = 3(2) + 2 = 8$ $U_3 = 3(8) + 2 = 26$ $U_4 = 3(26) + 2 = 80$ $U_5 = 3(80) + 2 = 242$	(1) (1) (1) (1)
2)	A sequence is defined by the recurrence relation $U_n = 0.9U_{n-1} + 2$ $U_1 = 3$ (a) Calculate the value of U_2	(a) $(0.9 \times 3) + 2$ 4.7	(1) (1)
(b)	What is the smallest value of n for which $U_n > 10$?	(b) $U_3 = 6.23$ $U_4 = 7.607$ $U_5 = 8.8463$ $U_6 = 9.96167$ $U_7 = 10.965503$ 7	(1) (1) (1) (1)
3)	Find the first 5 terms of the sequence in which $U_1 = 7$ and $U_{n+1} = U_n + n$ for $n \geq 1$.	$U_2 = 7 + 1 = 8$ $U_3 = 8 + 2 = 10$ $U_4 = 10 + 3 = 13$ $U_5 = 13 + 4 = 17$ 8, 10, 13, 17, ...	(1) (1) (1) (1)

Where to go next?

For more diagnostic questions, and GCSE maths revision resources and worksheets to support students in fixing any misconceptions take a look at the free Third Space Learning [GCSE maths revision](#) pages.

Scan the QR code to discover our library of FREE GCSE maths revision resources

Do you have KS4 students who need additional support in maths?



Our specialist tutors will help students to develop the skills they need to succeed at GCSE in weekly one to one online revision lessons. Trusted by secondary schools across the UK.

Visit thirdspacelearning.com to find out more.