UNIT 10 *Sequences* Overhead Slides

Overhead Slides

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OS 10.1 *Constant Differences*

Use the differences to extend each sequence:

A 3 10 17 24 31 ....

....

B 1 9 17 25 33 ....

....

C 5 8 11 14 17 ....

....

D 90 79 68 57 46 ....

....

OS 10.2 *Sequences Defined by Formulae*

A sequence is defined by the formula $u_n = 5n - 3$

$u_1 = 5 \times 1 - 3$

$=$

$u_2 = 5 \times \ldots - 3$

$=$

$u_3 =$

$=$

$u_4 =$

$=$

$u_{20} =$

$=$

$u_{100} =$

$=$

OS 10.3 *Finding the Formula*

Determine a formula for this sequence:

7 12 17 22 27 32 .....

The difference is $\square$, so the formula is

$$u_n = \square\, n + c$$

Use the first term to obtain c

$$7 = \square \times 1 + c \Rightarrow c = \square$$

So the formula is

$$u_n =$$

Determine a formula for this sequence:

40 37 34 31 28 25 .....

The difference is $\square$, so the formula is

$$u_n = \square\, n + c$$

Use the first term to obtain c

$$40 = \square \times 1 + c \Rightarrow c = \square$$

So the formula is

$$u_n =$$

OS 10.4a *Quadratic Sequences*

Determine the formula for the sequence:

5 11 19 29 41 55 71 .....

As the second differences are constant and all equal to 2, the sequence will have formula

$$u_n = n^2 +$$

Subtract n^2 from each term to obtain a new sequence

4 7

The formula for this sequence is

$$v_n =$$

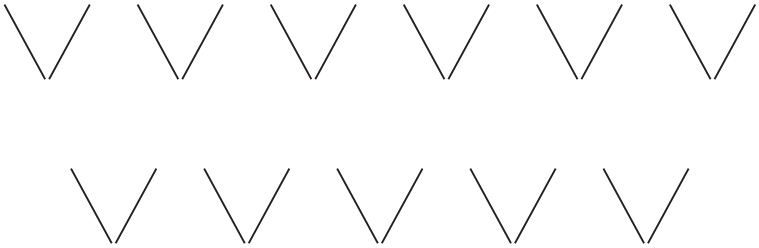
Combining the two sequences gives:

$$u_n =$$

OS 10.4b *Quadratic Sequences*

Determine the formula for the sequence

0 2 8 18 32 50 72 .....



The sequence will have a formula

$$u_n = \square\, n^2 + \square$$

Now form a new sequence as below:

– 2 – 6

This sequence has formula

$$v_n =$$

So the original sequence has formula

$$u_n =$$

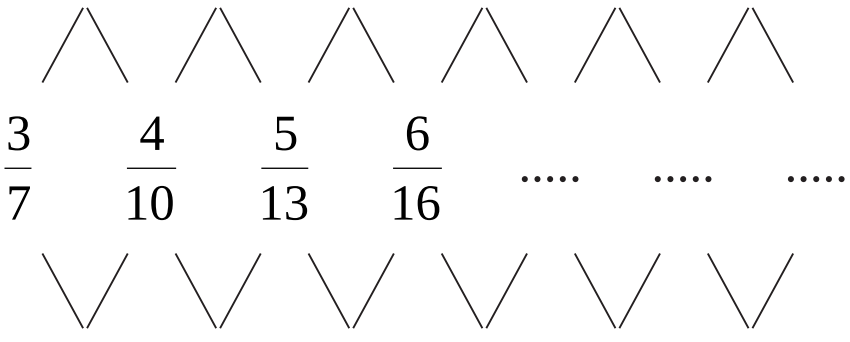
OS 10.5 *Further Sequences*

Use differences to extend the following sequences:

1. 2 3 5 8 13 ....

2. 1 4 5 9 14 ....

3.



OS 10.6 *Finding the Limit of a Sequence*

What happens to the sequence

$$u_n = \frac{2n-3}{n+1}$$

as n becomes large?

Complete the following table, and comment on the results.

n	u_n
1	
2	
5	
10	
50	
100	
1000	
2000	
5000	
10 000	