

1. June/2023/Paper_0444/21/No.8

The first four terms of two sequences are given.

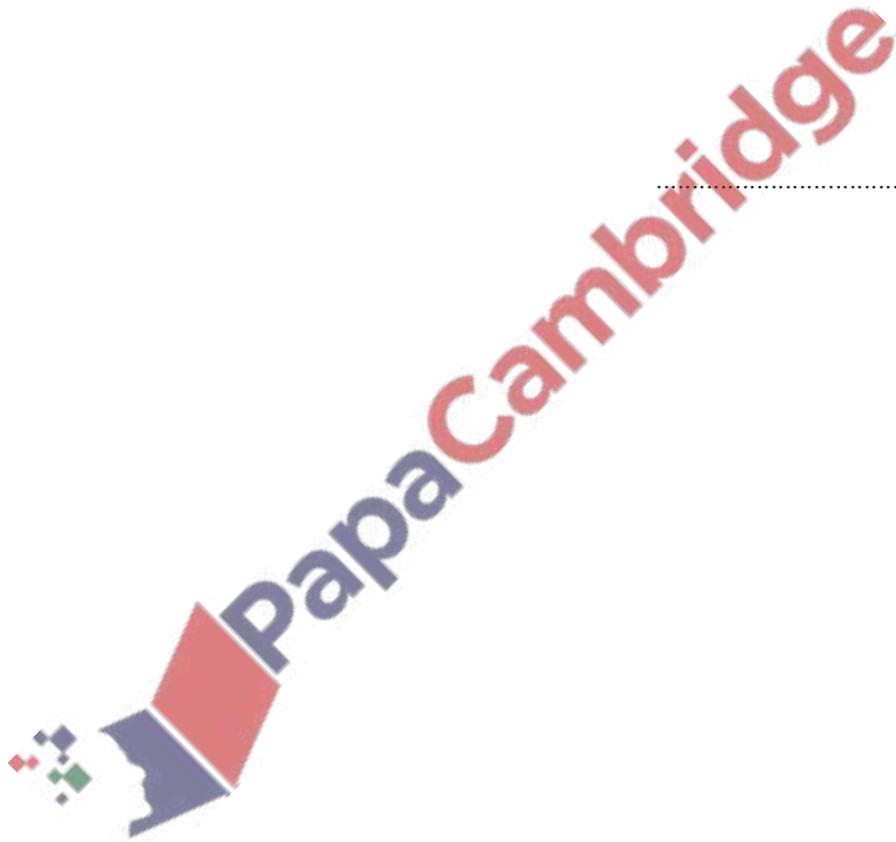
Find the n th term of each sequence.

(a) 2 7 12 17

..... [2]

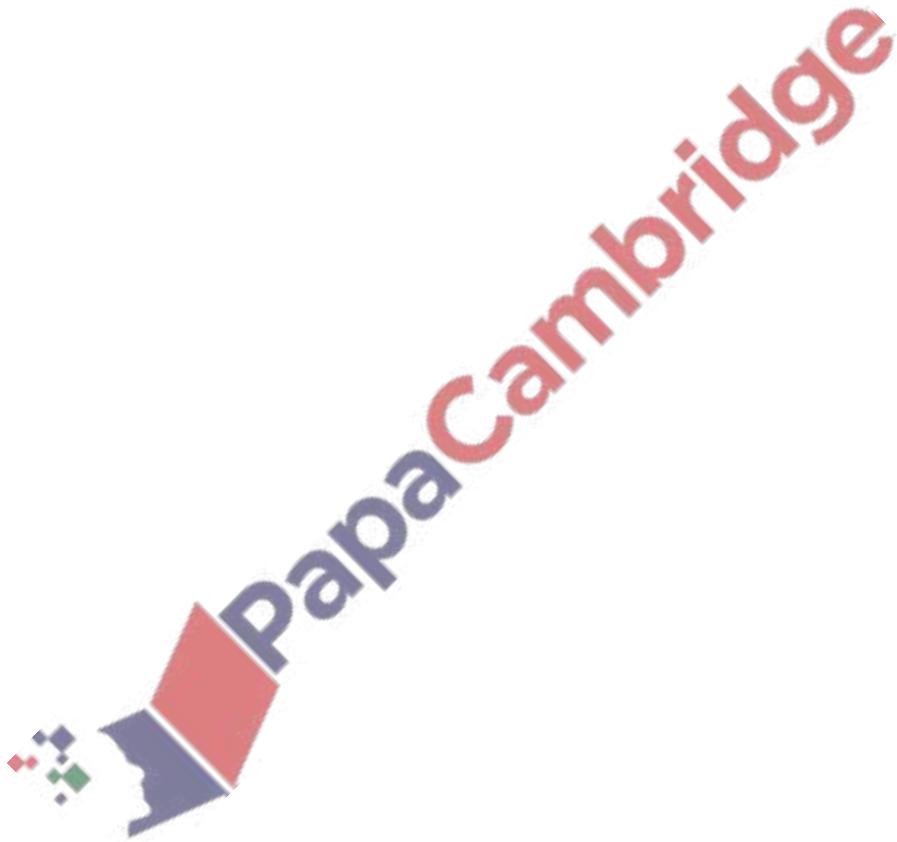
(b) 2 10 50 250

..... [2]



Simplify $(81x^{12})^{\frac{3}{4}}$.

..... [2]



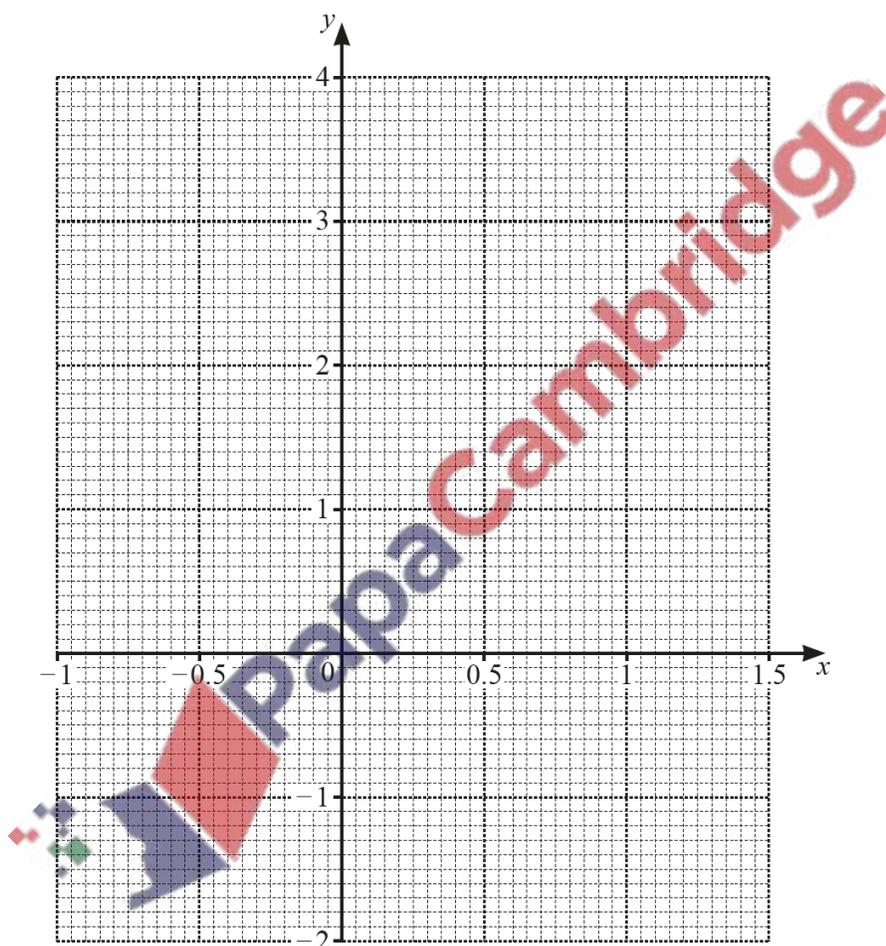
The table shows some values for $y = 3x^2 - 2x - 1$.

x	-1	-0.5	0	0.5	1	1.5
y		0.75	-1	-1.25	0	2.75

(a) Complete the table.

[1]

(b) On the grid, draw the graph of $y = 3x^2 - 2x - 1$ for $-1 \leq x \leq 1.5$.



[3]

(c) By drawing a suitable straight line, solve the equation $3x^2 - 4x - 2 = 0$ for $-1 \leq x \leq 1.5$.

$x = \dots\dots\dots$ [3]

(a) Factor fully.

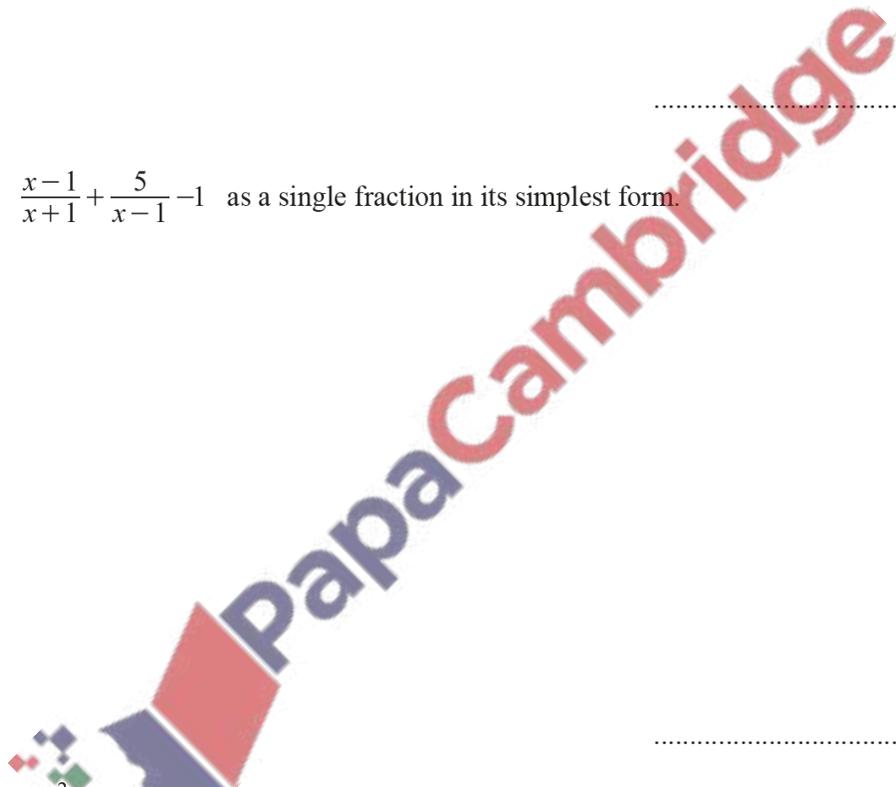
(i) $27y^2 - 3$

..... [3]

(ii) $2m - pk + 2k - pm$

..... [2]

(b) Write $\frac{x-1}{x+1} + \frac{5}{x-1} - 1$ as a single fraction in its simplest form.



..... [4]

(c) Solve $4x^2 - 3x - 2 = 0$.

You must show all your work and give your answers correct to 2 decimal places.

$x = \dots\dots\dots$ or $x = \dots\dots\dots$ [4]

(a) Solve for k .

$$\frac{k}{m} = 4 + kp$$

$k = \dots\dots\dots$ [4]

(b) Solve $\sqrt{x^2 + 64} = 10$.

$\dots\dots\dots$ [3]

(c) (i) Write $x^2 + 10x - 3$ in the form $(x + a)^2 + b$.

$\dots\dots\dots$ [2]

(ii) Write down the minimum value of $x^2 + 10x - 3$.

$\dots\dots\dots$ [1]

