1 (a) A geometric progression starts 4 16

Work out the next term.

[1 mark]

$a = 4$, $r = 4$

$T_3 = 4 \times 4^2$

$= 64$

Answer 64 (1)

2 The first three terms of a geometric progression are $\frac{2}{3}$ $\frac{4}{9}$ $\frac{8}{27}$

Circle the fourth term.

[1 mark]

$\frac{10}{81}$ $\frac{14}{81}$ $\frac{16}{81}$ $\frac{32}{81}$

3 A is an **arithmetic** progression.

Here are the first four terms.

13 16 19 22

G is a **geometric** progression.

Here are the first four terms.

2 4 8 16

nth term of A = 8th term of G

Work out the value of n.

[4 marks]

A : $a = 13$, $d = 3$ (1)

G : $a = 2$, $r = 2$

G : $T_8 = 2 \times 2^7 = 256$ (1)

$256 = 13 + (n-1)3$ (1)

$243 = (n-1)3$

$n - 1 = 81$

$n = 82$ (1)

$n =$ 82

4 (a) The first three terms of a geometric progression are

$\frac{\sqrt{5}}{2}$ $\frac{5}{4}$ $\frac{5\sqrt{5}}{8}$

×√5 ×√5 ×2 ×2

Work out the next term.

[1 mark]

4th term $= \frac{5\sqrt{5}(\sqrt{5})}{8 \times 2} = \frac{5(5)}{16}$

$= \frac{25}{16}$

Answer $\frac{25}{16}$ ✓ (1)

4 (b) The nth term of a sequence is $(2+\sqrt{3})^n$

Show that the third term is $26 + 15\sqrt{3}$

[3 marks]

$T_3 = (2+\sqrt{3})^3$

$= (2+\sqrt{3})(2+\sqrt{3})(2+\sqrt{3})$

$= (4+4\sqrt{3}+3)(2+\sqrt{3})$ ✓ (1)

$= (7+4\sqrt{3})(2+\sqrt{3})$ ✓ (1)

$= 14 + 7\sqrt{3} + 8\sqrt{3} + 4(3)$

$= 14 + 12 + 15\sqrt{3}$ ✓ (1)

$= 26 + 15\sqrt{3}$ (shown)