SERIES AND PYTHAGORAS' THEOREM TEST - 3⁰ ESO

Exercise 1: (1 point) Find the general term in the following series:

a) $\{8, 6, 4.5, 3.375, 2.53125, \cdots\}$

b) $\left\{ \dfrac{4}{3}, 1, \dfrac{16}{27}, \dfrac{25}{81}, \dfrac{36}{243}, \dfrac{49}{729} \cdots \right\}$

c) $\{-9, -5, -1, 3, 7 \cdots\}$

Exercise 2: (1 point) In an arithmetic progression we know that $a_3 = 4$ and $a_{12} = -32$.

a) Find the general term of the sequence

b) In which place can we find the term $a_n = -330$?

Exercise 3: (0.75 points) The first term of an arithmetic progression is 9 and the fifteenth term is 107. Find the sum of the first thirty five terms.

Exercise 4: (0.75 points) In a geometric progression we know that $a_7 = 256$ and $a_{12} = 8192$ Find the general term.

Exercise 5: (1 point) The first term of a geometric progression is 7 and the third is 0.28.

a) Find the sum of the first 98 terms

b) Find the sum of the first 200 terms

c) Can you jump to any conclusions?

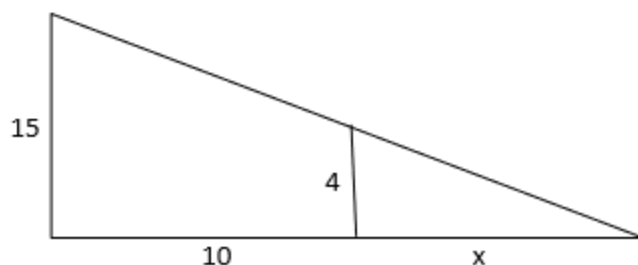**Exercise 6: (0.5 points)** Fibonacci's sequence is defined as follows:

$$a_1 = 1 \; ; \quad a_2 = 1 \; ; \quad a_n = a_{n-1} + a_{n-2}$$

Write the first eight terms

Exercise 7: (2 points) Work out the value of the area of a pentagonal pyramid with height 12cm if the length of the side of the base is 10cm and the edge is 15cm.

15 cm

10 cm
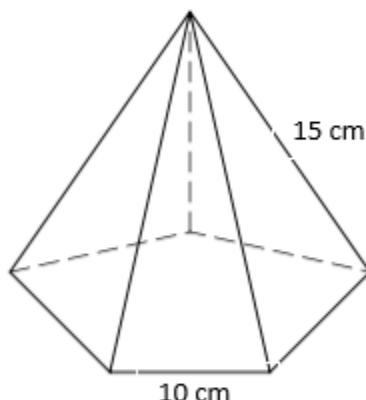
Exercise 8: (0.75 points) Work out the value of x in this figure:

15

4

10

x

Exercise 9: (1.25 points) The axial diagonal of a cuboid is 20 cm, and the sides of the base are 9 cm and 7 cm. Find its area.
Hint: Work out the value of the altitude first

Exercise 10: (1 point) Work out the value of the sides of this right-angled triangle