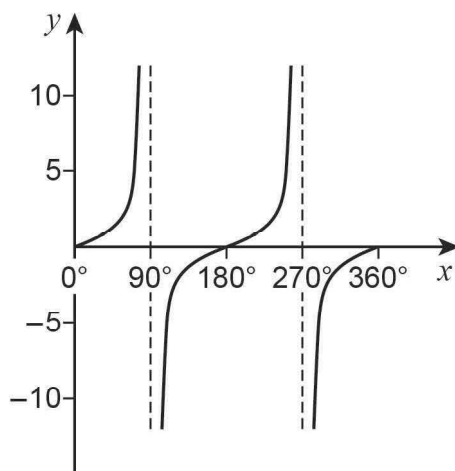


21 Here is a sketch of the graph of $y = \tan x$ where $0^\circ \leq x \leq 360^\circ$



You are given that $\tan 78.69^\circ = 5$

21 (a) Work out the other value of x where $\tan x = 5$ and $0^\circ \leq x \leq 360^\circ$

[1 mark]

Answer _____°

21 (b) Work out the **two** values of x where $\tan x = -5$ and $0^\circ \leq x \leq 360^\circ$

[2 marks]

Answer _____° and _____°



22

$$7^n = x$$

Match each expression on the left to the correct expression on the right.
One has been done for you.

[3 marks]

$$7^{-n}$$

$$7^{2n}$$

$$7^{n+1}$$

$$7^{\frac{1}{2}n}$$

$$7x$$

$$\frac{1}{x}$$

$$\frac{1}{2}x$$

$$\sqrt{x}$$

$$x^2$$

Turn over for the next question

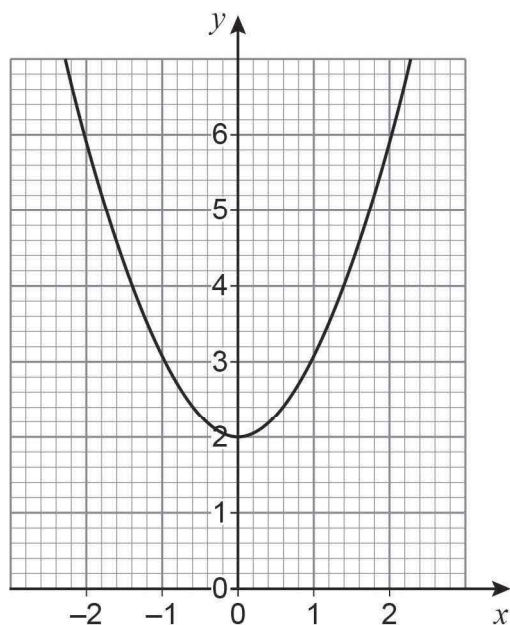
Turn over ►



23 In each part, the graph shown is a transformation of the graph $y = x^2$

23 (a) Write down the equation of the graph shown.

[1 mark]

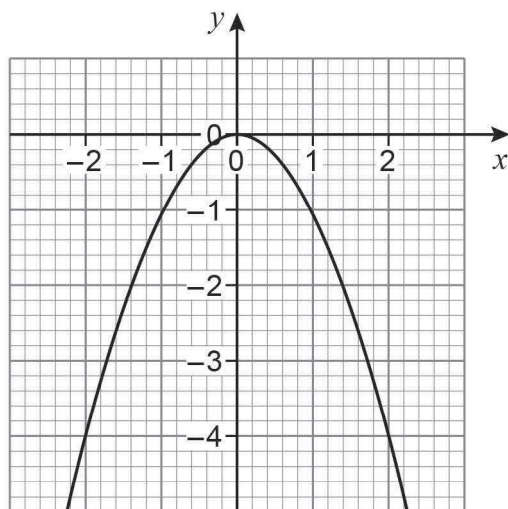


Answer _____



23 (b) Write down the equation of the graph shown.

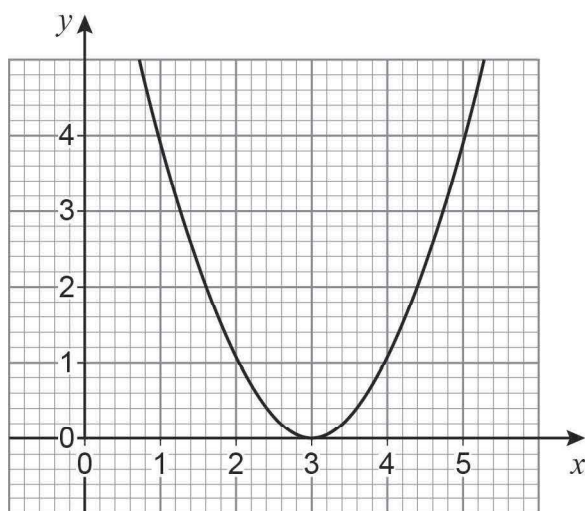
[1 mark]



Answer _____

23 (c) Write down the equation of the graph shown.

[1 mark]



Answer _____

END OF QUESTIONS



22

The n th term of a sequence is $n^2 - 30n + 236$

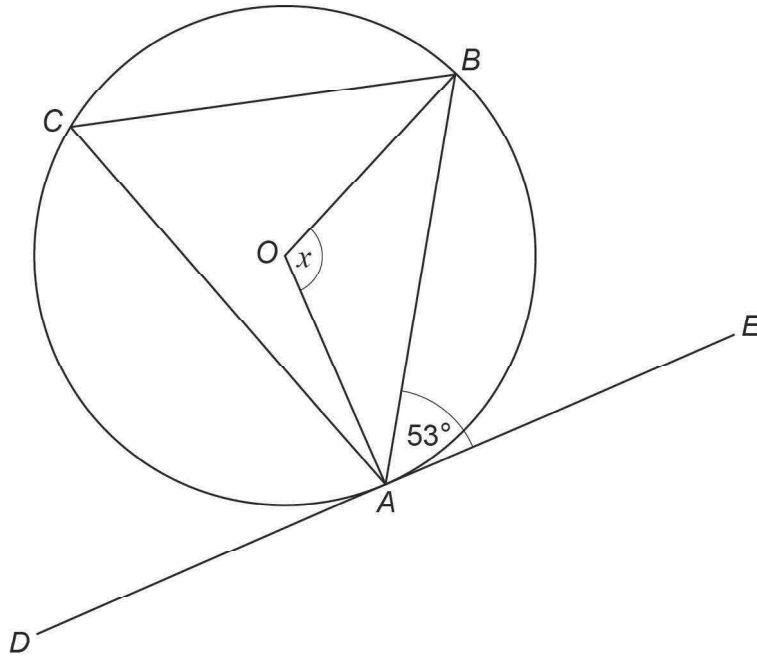
By completing the square,

show that all the terms of the sequence have two or more digits.

[3 marks]



23 (a)

Not drawn
accurately

Line DAE is a tangent at A to the circle with centre O .

Work out the size of angle x .

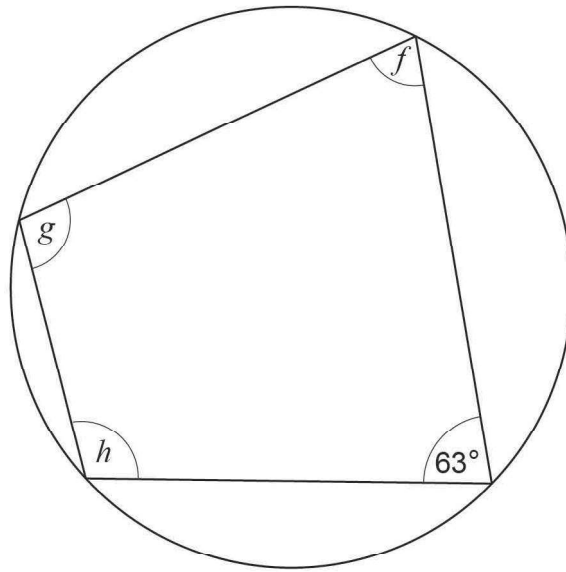
[2 marks]

$x =$ _____ $^{\circ}$

Turn over for the next question



23 (b) Here is a cyclic quadrilateral.



Not drawn
accurately

$$f : g = 2 : 3$$

Work out $f : h$

Give your answer in its simplest form.

[4 marks]

Answer _____ :



21

A bag contains 25 discs.

11 are red, 9 are blue and 5 are yellow.

Ashley picks three of the discs at random without replacement.

Ashley's first disc is red.

Work out the probability that all three discs are different colours.

[3 marks]

Answer _____



22

The metal used to make a sphere costs £4320

The metal costs £3.60 per gram.

Each cubic centimetre of metal has a mass of 17.3 grams.

Work out the radius, r , of the sphere.

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

[4 marks]

$r =$ _____ cm

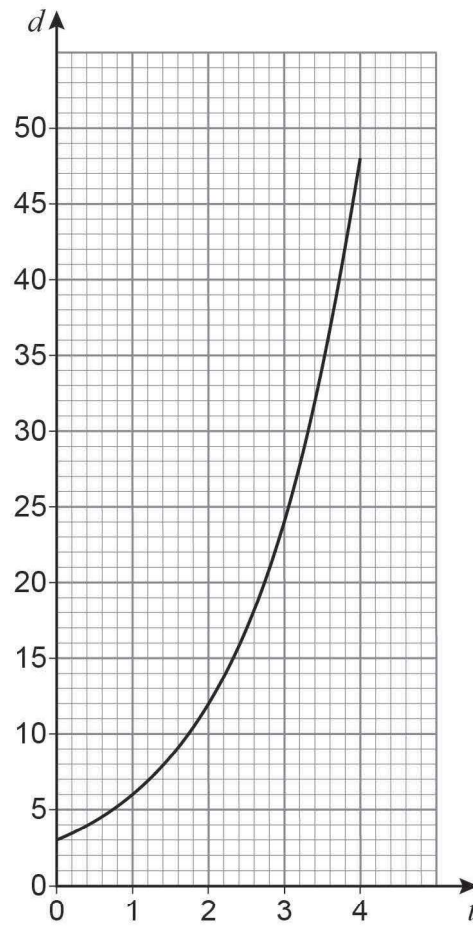
Turn over for the next question



23

The distance of a particle from a point is d metres after t seconds.

$$d = a \times b^t \quad \text{where } a \text{ and } b \text{ are constants}$$



Work out the values of a and b .

[3 marks]

$a =$ _____ $b =$ _____



[5 marks]

Answer (_____ , _____) and (_____ , _____)

8

