Maths-it

Podcast

Simultaneous equations

Topics

Solve linear simultaneous equations
Solve simultaneous equations where one is linear and one is quadratic
Solve simultaneous equations where one is linear and one is in the form $x^2 + y^2 = r^2$

Questions

1.   Solve the simultaneous equations

$$2x + 5y = 5$$
$$5x - 2y = 56$$

$x =$ ……………………

$y =$ ……………………

(Total 4 marks)

2.   *ABC* is an isosceles triangle.
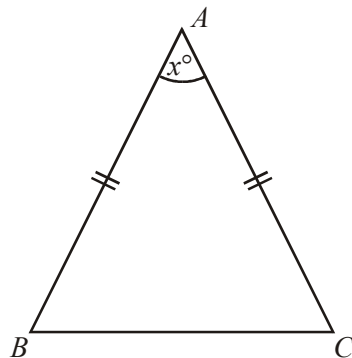
Diagram **NOT**
accurately drawn

AB = AC
AB = 5r – 2s
BC = r + 2s

(a)   Find an expression, in terms of *r* and *s,* for the perimeter of the triangle.
Give your answer in its simplest form.

……………………………

(2)

Angle $A = x°$

(b)   Find an expression, in terms of x, for the size of angle B.

....

(2)

(c)   Solve the simultaneous equations

$$5r - 2s = 13$$

$$r + 2s = 5$$

$r =$ ....

$s =$ ....

(3)

(Total 7 marks)

3.   Stuart said that the line $y = 4$ cuts the curve $x^2 + y^2 = 16$ at two points.

(a)   By eliminating y show that Stuart is incorrect.

(2)

(b)   By eliminating y, find the solutions to the simultaneous equations

$$x^2 + y^2 = 16$$

$$y = 2x - 8$$

$x =$ .... $y =$ ....

or $x =$ .... $y =$ ....
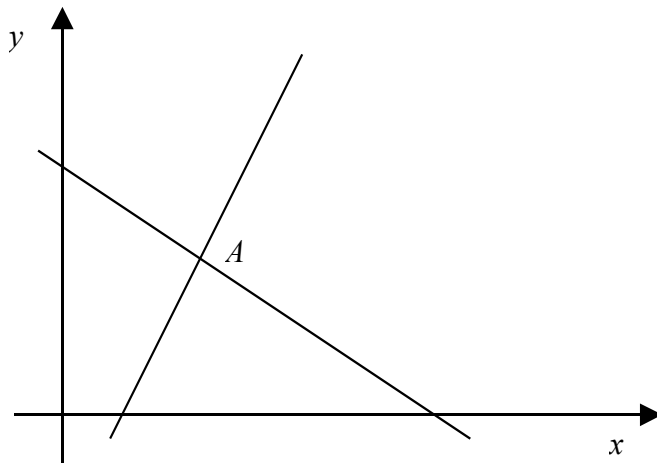
(6)

(Total 8 marks)

4.

Diagram **NOT** accurately drawn

The diagram shows two straight lines intersecting at point A.
The equations of the lines are

$y = 2x - 4$
$2x + 3y = 36$

Work out the coordinates of A.

(..................., ...)
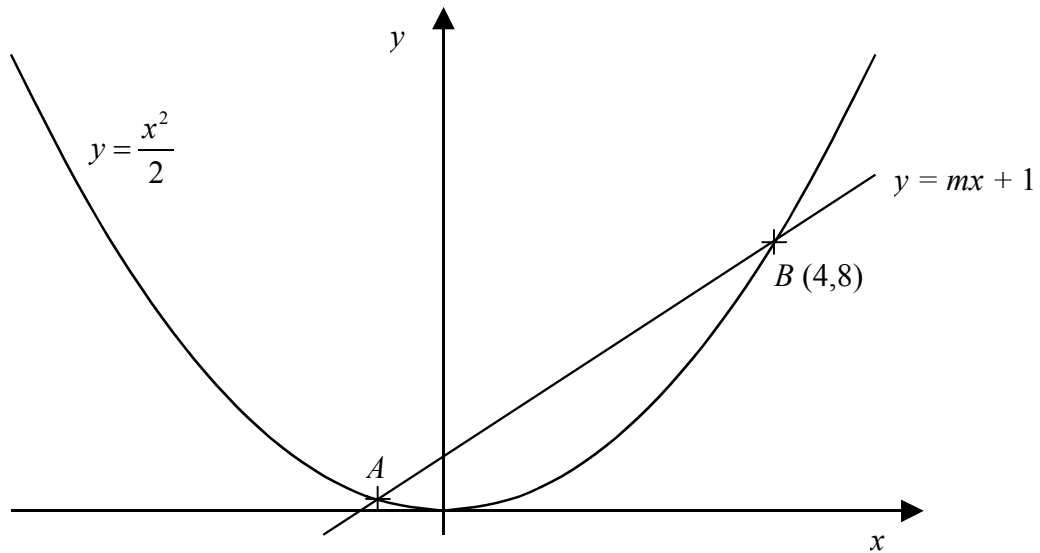**(Total 3 marks)**

5.   The graphs of $y = \dfrac{x^2}{2}$ and $y = mx + 1$ intersect at the points A and B.

The point B has coordinates $(4, 8)$.

Find the coordinates of the point A.

(........, ...)

(Total 4 marks)