A6

Algebra exam review

1 Solve the simultaneous equations

$$6x + 5y = 5$$
$$3x - 10y = 15$$

x = ...

y = ...

(Total 3 marks)

2 **a** Solve the inequality $x^2 \leqslant 4$

.....

(2)

b On the number line, represent the solution set of $x^2 \leqslant 4$

(2)

(Total 4 marks)

3

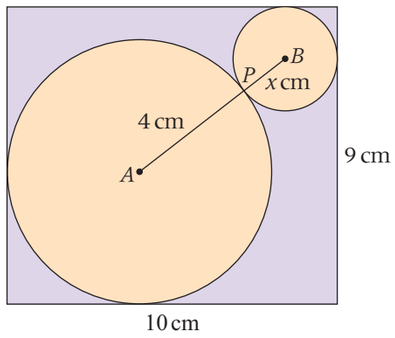


Diagram **NOT** accurately drawn

The diagram shows one disc with centre A and radius 4 cm and another disc with centre B and radius x cm.
The two discs fit exactly into a rectangular box 10 cm long and 9 cm wide.
The two discs touch at P.
APB is a straight line.

a Use Pythagoras's theorem to show that $x^2 - 30x + 45 = 0$

(4)

b Find the value of x.
Give your value correct to 3 significant figures.

$x =$ .....

(3)

(Total 7 marks)

4 Solve the simultaneous equations

$$2x + y = 6$$
$$x^2 + y^2 = 20$$

.....

(Total 7 marks)

5 a Solve the simultaneous equations

$$2x + 3y = 4$$
$$6x + 5y = 8$$

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

(3)

b Write down the coordinates of the point of intersection of the two lines whose equations are

$$2x + 3y = 4 \text{ and}$$
$$6x + 5y = 8$$

(....., ...)

(1)

(Total 4 marks)

6 Two numbers have a difference of 15 and a product of 199.75

The larger of the two numbers is x.

a Show that

$$x^2 - 15x - 199.75 = 0$$

(3)

b Solve the equation

$$x^2 - 15x - 199.75 = 0$$

.....

(3)

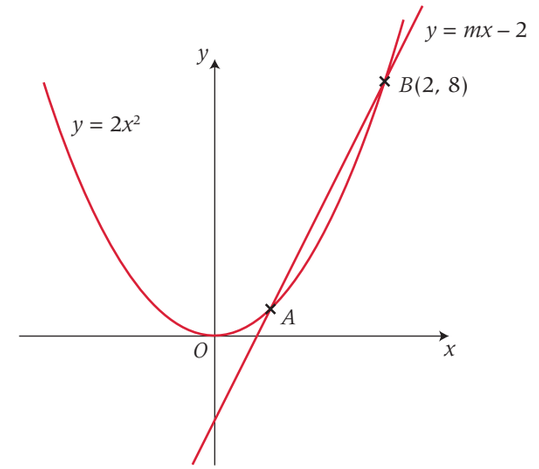
(Total 6 marks)

7 a Find the equation of the straight line which passes through the point (0, 3) and is **parallel** to the straight line with equation $y = 2x$.

.....

(2)

The graphs of $y = 2x^2$ and $y = mx - 2$ intersect at the points A and B. The point B has coordinates (2, 8).



b Find the coordinates of the point *A*.

(....., ...)

(Total 4 marks)

8

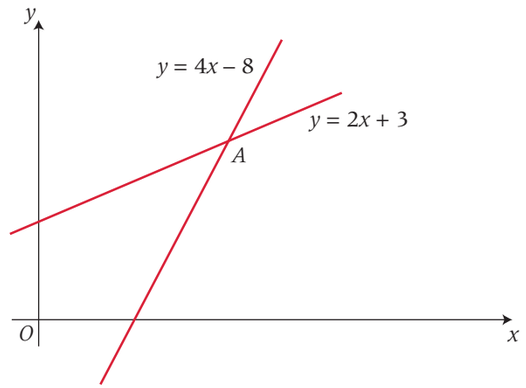


Diagram **NOT** accurately drawn

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

$y = 4x - 8$

$y = 2x + 3$

Work out the coordinates of *A*.

(....., ...)

(Total 3 marks)