Quadratic Equations

31 marks

1. Solve $x^2 + 3x - 5 = 0$

Give your solutions correct to 4 significant figures.

……

(Total 3 marks)

2. $3x^2 = 108$

Find the value of x

$x =$ ……

(Total 2 marks)

3. Solve $x^2 - 3x - 18 = 0$

……

(Total 3 marks)

4. (a) Factorise $x^2 - 2x - 15$

……

(2)

(b) Hence, or otherwise, solve

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

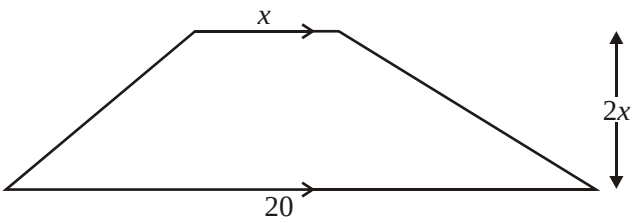
$x =$ …… or $x =$ ……..

(1)

(Total 3 marks)

5.

Diagram **NOT** accurately drawn



The diagram shows a trapezium.
The measurements on the diagram are in centimetres.
The lengths of the parallel sides are x cm and 20 cm.
The height of the trapezium is $2x$ cm.

The area of the trapezium is 400 cm^2.

(a) Show that

$$x^2 + 20x = 400$$

(2)

(b) Find the value of x.
Give your answer correct to 3 decimal places.

.....

(3)
(Total 5 marks)

6. The diagram below shows a 6-sided shape.

All the corners are right angles.

All measurements are given in centimetres.

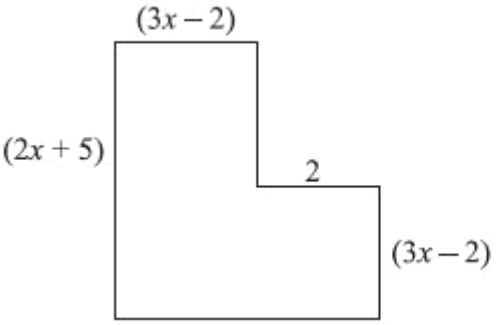


Diagram **NOT** accurately drawn

The area of the shape is 25 cm^2.

(a) Show that $6x^2 + 17x – 39 = 0$

(3)

(b) (i) Solve the equation

$6x^2 + 17x – 39 = 0$

x = …… or x = ……

(ii) Hence work out the length of the longest side of the shape.

……..cm

(4)

(Total 7 marks)

7.

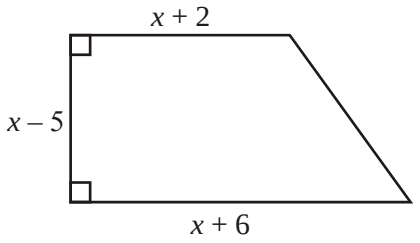


Diagram **NOT** accurately drawn

The diagram shows a trapezium.
The lengths of three of the sides of the trapezium are $x – 5$, $x + 2$ and $x + 6$.
All measurements are given in centimetres.

The area of the trapezium is 36 cm^2.

(a) Show that $x^2 – x – 56 = 0$

(4)

(b) (i) Solve the equation $x^2 – x – 56 = 0$

……

(ii) Hence find the length of the shortest side of the trapezium.

…… cm

(4)
(Total 8 marks)