**Question 1**

Express   in the form  .

..........................  **(2 marks)**

**Question 2**

Express   in the form  .

**.......................... (2 marks)**

**Question 3**

Express   in the form   where   and   are constants.

**.......................... (2 marks)**

**Question 4**

Write   in the form

**.......................... (3 marks)**

**Question 5**

Write   in the form

**.......................... (3 marks)**

**Question 6** Solve by factorisation

**.......................... (3 marks)**

**Question 7** Solve by factorisation

**.......................... (3 marks)**

**Question 8**

Solve the equation   correct to 1 decimal place.

**.......................... (3 marks)**

**Question 9**

Solve the equation   correct to 1 dp.

**.......................... (3 marks)**

**Question 10**

Solve   Do **not** use trial and improvement.  
 Write your solutions to 3 significant figures.

**.......................... (6 marks)**

**Question 11**

Solve  by completing the square.  
Give your answer in the form  , where   and   are integers.

**.......................... (4 marks)**

**Question 12**

Solve   Give your answer in the form   where   and   are integers.

**.......................... (4 marks)**

**Question 13**

Use the discriminant to determine the nature of the roots of the function

**.......................... (2 marks)**

**Question 14**

Determine the nature of the roots of the equation

[   ]  "two real and distinct roots"   
[   ]  "one real repeated root" / "equal roots"   
[   ]  "no real roots"

**Question 15**

Find the value of   for which the equation   has one repeated real root.

**..........................**

**Question 16**

A curve has the equation  .

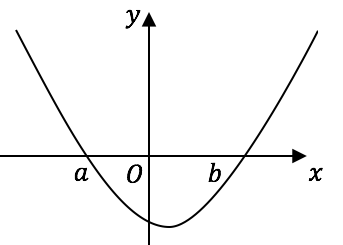
Find the coordinates of the point where the curve intercepts the  -axis.

**.......................... (1 mark)**

**Question 17**

Below is a sketch of the graph with equation  .

Work out the values of   and  .



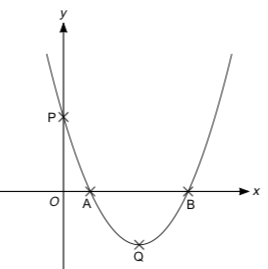
**..........................**

**Question 18**

Sketch the graph of  .  
On your sketch, show clearly the points of intersection with the  -axis and the  -axis, and the coordinates of the turning point.

**(2 marks)**

**Question 19** This is a sketch of the graph of  .



Work out the coordinates of the turning point Q.

**.......................... (3 marks)**

**Question 20**

You are given that

Write the coordinates of the minimum point on the curve

**.......................... (1 mark)**

**Question 21**

The curve   has equation

The point   is the maximum point on . Write down the coordinates of  .

**.......................... (1 mark)**

**Question 22**

By completing the square, find the coordinates of the turning point of the curve with equation   You must show all your working.

**.......................... (3 marks)**