**Parametric equations 15-12-21**

**Question 1**

*[Edexcel C4 Jan 2010 Q7a]*



,

The curve *C* cuts the -axis at the points and .

Find the -coordinate at the point and the *-*coordinate at the point .

**Correct answer:**

 or

**Their answer:**

 or

 **(3 marks)**

**Question 2**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 3**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 6**

*[Edexcel A2 Specimen Papers P2 Q10a]*



Figure 4 shows a sketch of the curve with parametric equations

State the domain of values of for the curve .

*Input note: use exact values.*

**Correct answer:**

**Their answer:**

 **(1 mark)**

**Question 8**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 4**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 5**

*[Edexcel C4 June 2014 Q5a Edited]*



Figure 3 shows a sketch of the curve *C* with parametric equations

, ,

Show that

where is an exact constant to be determined.

**Correct answer:**

**Their answer:**

 **(3 marks)**

**Question 7**

*[Edexcel C4 June 2014(R) Q8a]*



The curve shown in Figure 3 has parametric equations

, ,

The point , with coordinates , lies on the curve.

Given that , find the exact value of *.*

**Correct answer:**

**Their answer:**

 **(2 marks)**

**Question 9**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 10**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 11**

[SQA Advanced Higher Maths 2017]

A beam of light passes through the points and .

Obtain parametric equations of the line representing the beam of light.

**Correct answer:**

, ,

**Their answer:**

, ,

**Question 12**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 13**

*[Edexcel C4 Jan 2013 Q5d Edited]*



Figure 2 shows a sketch of part of the curve *C* with parametric equations

, .

The curve crosses the -axis at the point and crosses the -axis at the point .

The point has coordinates and the point has coordinates .

The region *R*, as shown shaded in Figure 2, is bounded by the curve *C*, the line and the -axis.

Use integration to find the exact area of *R*.

**Correct answer:**

**Their answer:**

 **(6 marks)**

**Question 14**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 15**

*[OCR C4 June 2016 Q9i]*

A curve has parametric equations , , for .

Find the coordinates of the points where the curve meets the -axis.

**Correct answer:**

, or , or ,

**Their answer:**

, or , or ,

 **(3 marks)**

**Question 16**

The curve has parametric equations

, ,

Find a Cartesian equation for the curve .

**Correct answer:**

**Their answer:**

**Question 17**

*[Edexcel C4 June 2013 Q4b Edited]*

A curve *C* has parametric equations

, ,

Find a cartesian equation for *C* in the form

,

**Correct answer:**

**Their answer:**

 **(3 marks)**

**Question 18**

*[Edexcel C4 June 2017 Q1c]*

The curve *C* has parametric equations

Show that the cartesian equation for *C* can be written in the form

,

where and are integers to be determined.

**Correct answer:**

**Their answer:**

 **(3 marks)**

**Question 19**

*[Edexcel C4 June 2017 Q8b Edited]*



Figure 4 shows a sketch of part of the curve *C* with parametric equations

The point lies on *C*, where is a constant.

It can be shown that

The finite region *R*, shown shaded in Figure 4, is bounded by the curve *C*, the -axis, the -axis and the line with equation .

Show that the area of *R* can be expressed in the form

where , and are constants to be determined.

**Correct answer:**

, ,

**Their answer:**

, ,

 **(4 marks)**

**Question 20**

*[Edexcel C4 June 2017 Q8a]*



Figure 4 shows a sketch of part of the curve *C* with parametric equations

The point lies on *C*, where is a constant.

Find the exact value of .

**Correct answer:**

**Their answer:**

 **(2 marks)**