



Centre Number

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Candidate Number

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Surname

Forename(s)

Signature

Level 2 Certificate

FURTHER MATHEMATICS

Paper 2 Calculator

Wednesday 22 June 2022

Afternoon

Time allowed: 1 hour 45 minutes

Student Self Reflection

Topics I need to **revise**Topics I need to **learn**Silly Mistakes?Target mark for next time

For teacher use

Pages	Mark
2-3	
4-5	
6-7	
8-9	
10-11	
12-13	
14-15	
16-17	
18-19	
TOTAL	



Answer **all** questions in the spaces provided.

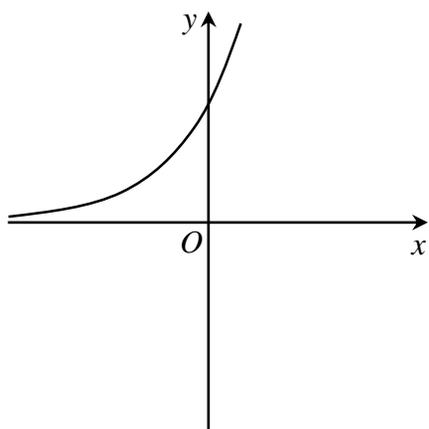
Do not write
outside the
box

1 Here are four sketch graphs.

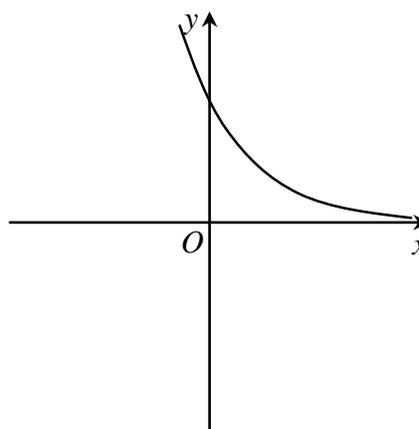
Circle the letter of the sketch that represents $y = 3 \times 2^{-x}$

[1 mark]

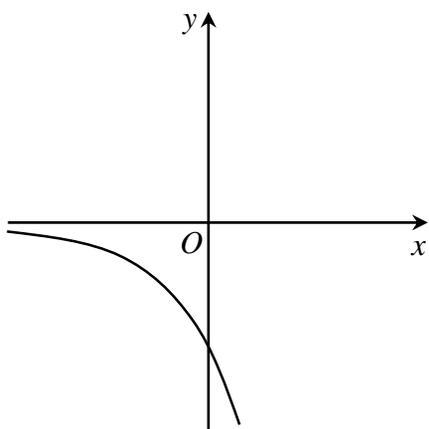
A



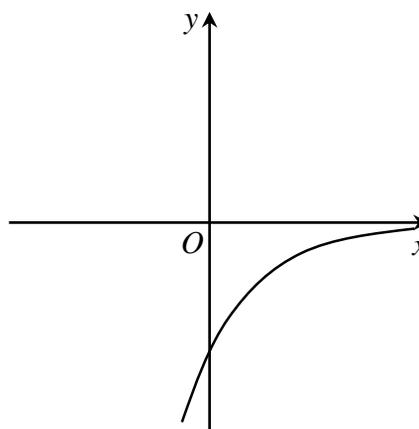
B



C



D





Do not write
outside the
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2 A circle has radius 15 and centre (3, -4).

Circle the correct equation for the circle.

[1 mark]

$$(x + 3)^2 + (y - 4)^2 = 225$$

$$(x + 3)^2 + (y - 4)^2 = \sqrt{15}$$

$$(x - 3)^2 + (y + 4)^2 = 225$$

$$(x - 3)^2 + (y + 4)^2 = \sqrt{15}$$

3 x and y are integers.

$$-8 \leq x \leq -5$$

$$0 \leq y \leq 3$$

Tick the correct box for each statement.

[2 marks]

Always true

Sometimes true

Never true

$$xy < 0$$

$$x^2 > y^2$$

$\frac{\quad}{4}$

Turn over ►



Do not write
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$$4 \quad \begin{pmatrix} -3 & 0 \\ 2b & b \end{pmatrix} \begin{pmatrix} 4 \\ b \end{pmatrix} = \begin{pmatrix} 2a \\ 20 \end{pmatrix}$$

4 (a) Work out the value of a .

[2 marks]

$$a = \underline{\hspace{10cm}}$$

4 (b) Work out two possible values of b .

[3 marks]

$$b = \underline{\hspace{2cm}} \quad \text{and} \quad b = \underline{\hspace{2cm}}$$



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5 (a) $(2m^5)^6 \equiv (am^b)^3$

Work out the values of a and b .

[2 marks]

$a = \underline{\hspace{2cm}}$ $b = \underline{\hspace{2cm}}$

5 (b) $\sqrt{\frac{n^{49} \times n^{28}}{n^t}} = n^{-4t}$

Work out the value of t .

[3 marks]

$t = \underline{\hspace{3cm}}$

Turn over ►



Do not write
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6 $y = (x + 1)(x + 2)^2$

Work an out expression for the rate of change of y with respect to x . **[4 marks]**

Answer _____

7 The 50th term of a linear sequence is 327.
The 65th term of the sequence is 432.

The k th term of the sequence is the first term greater than 1000.
Work out the value of k . **[4 marks]**

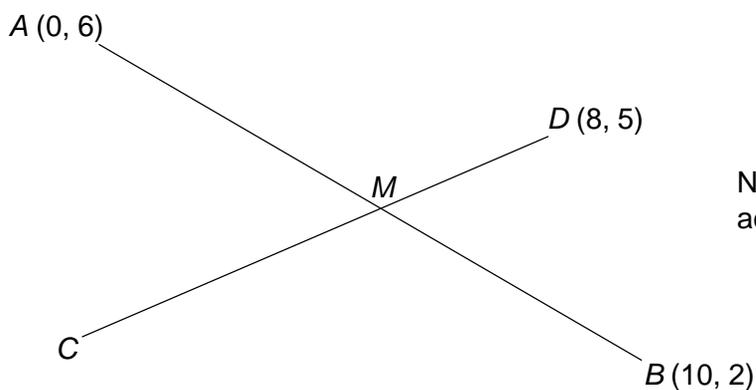
$k =$ _____





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8



Lines AB and CD intersect at point M .
 M is the midpoint of line AB .
 $CM : MD = 2 : 1$

Work out the coordinates of point C .

[3 marks]

Answer (_____ , _____)

Turn over ►



Do not write
outside the
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9 (a) Factorise fully $9(x - 2)^4 + 6(x - 2)^5$ **[3 marks]**

Answer _____

9 (b) Simplify fully $\frac{8y^6 + 6y^5}{16y^2 - 9}$ **[3 marks]**

Answer _____



Do not write
outside the
box

10 $3x^2 + 24x - 1$ can be written in the form $a(x + b)^2 + c$

Work out the values of a , b and c .

[3 marks]

$a =$ _____ $b =$ _____ $c =$ _____

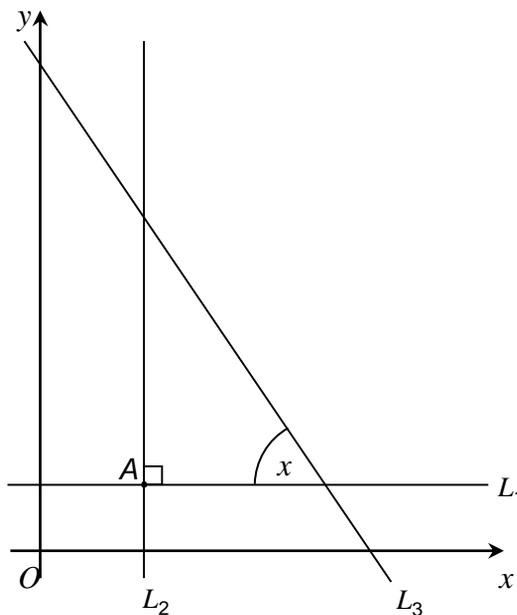
$\frac{\quad}{9}$

Turn over ►



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11



Not drawn
accurately

Straight lines L_1 and L_2 intersect at point $A(3, 2)$.
Line L_1 is parallel to the x -axis.
Line L_3 has equation $y = -2x + 16$

Work out the size of angle x .
Give your answer to 3 significant figures.

[4 marks]

Answer _____ °





Do not write
outside the
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15 Integers are made using some of the digits 0, 1, 2, 3, 4 and 5.

Each integer made

- has 4 digits
- is greater than 3000
- has no digit repeated
- is a multiple of 5

How many integers can be made?

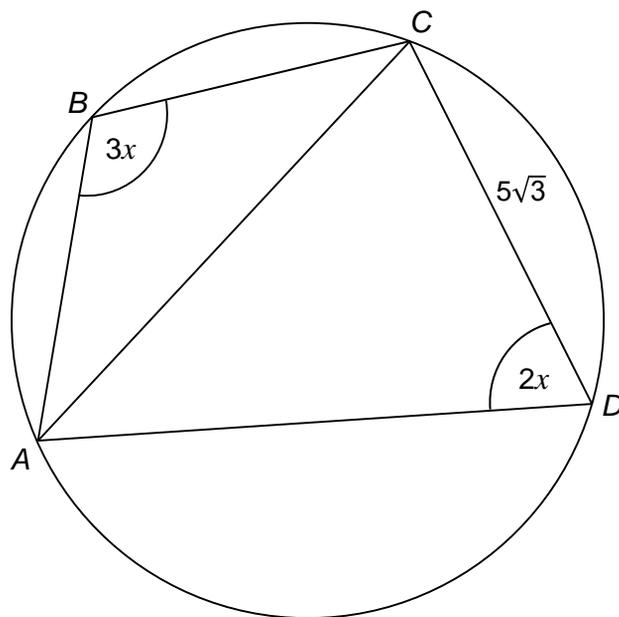
[3 marks]

Answer _____



Do not write outside the box

16



A, B, C and D are points on the circumference of a circle.

$$AB = BC$$

$$BC : CD = \sqrt{2} : 2$$

Find the area of triangle ABC .

[5 marks]

Answer _____ units²

$\frac{\quad}{8}$

Turn over ►

