



Class
Maths

Video Solutions



PRACTICE PAPER FOR

AQA Level 2 Further Maths Paper 2 (June 2024)

----- Disclaimer -----

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Do not write
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box

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

1 $5m(6y - 4) + 10(3 - my) \equiv 10y + n$

Work out the values of m and n

[4 marks]

$m =$ _____ $n =$ _____

2 $f(x) = x^2 + k$ $g(x) = x - 7$

$fg(2) = 28$

Work out the value of k .

[2 marks]

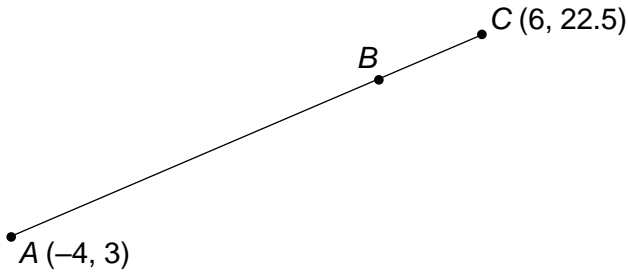
$k =$ _____





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3 ABC is a straight line with $AB : AC = 4 : 5$



Work out the coordinates of B .

[4 marks]

Answer (_____ , _____)

4 $y = -x^5$

Work out the rate of change of y with respect to x , when $x = 4$

[3 marks]

Answer _____

Turn over ►





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5 The points $A(0, a)$ and $B(b, 2.5)$ are on the graph has the equation $y = 5 \times 2^x$
Work out the values of a and b **[3 marks]**

$a =$ _____ $b =$ _____

6 Simplify fully $\frac{6x^2 + 11x - 10}{2xy + 5y}$ **[3 marks]**

Answer _____





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7 $A = \begin{pmatrix} 0 & a \\ 1 & 4 \end{pmatrix}$ $B = \begin{pmatrix} 8 & 2 \\ b & 0 \end{pmatrix}$

$AB = 2I$ where I is the identity matrix.

Work out the values of a and b .

[3 marks]

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

8 $p + q : p - q = 6 : 1$

Work out $p : q$ giving your answer as a ratio in its simplest form.

[3 marks]

$p : q = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

12

Turn over ►





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9 The function f is given by $f(x) = \frac{x+3}{x-8}$

9 (a) Give a reason why $x > 0$ is not a suitable domain for $f(x)$ [1 mark]

9 (b) Work out $f^{-1}(x)$ [3 marks]

$f^{-1}(x) =$ _____

9 (c) The function g is given by $g(x) = x^2$ with domain $x < -4$

Work out the range of the function. [2 marks]

Answer _____





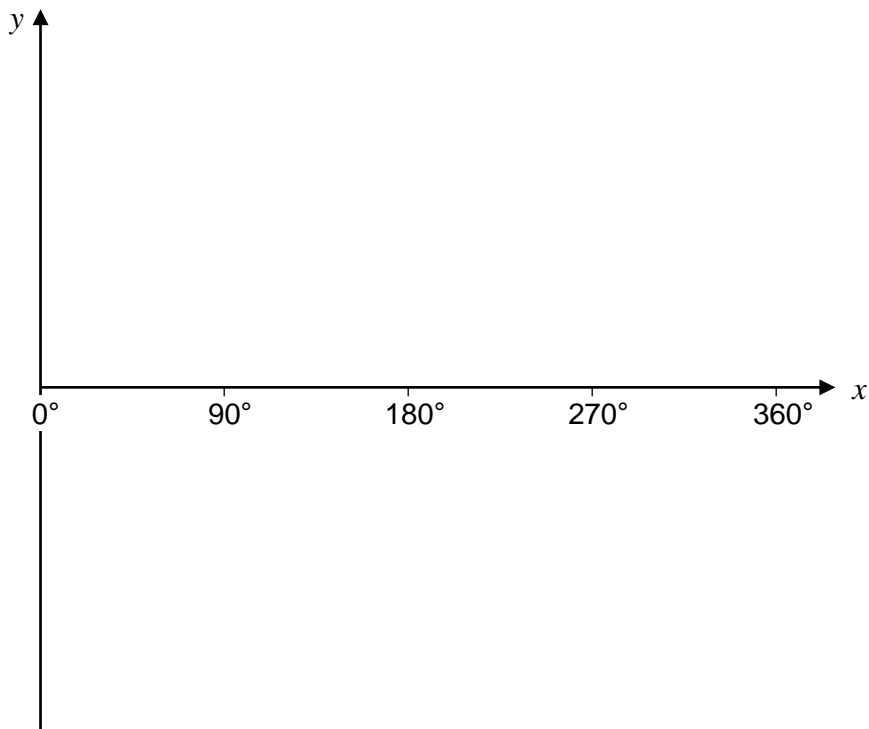
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9 (d) The function h is given by $h(x) = \sin(x) - 1$ for all x

Write down the range of the function. **[2 marks]**

Answer _____

9 (e) On the axes, sketch the graph of $y = h(x)$ for $0^\circ \leq x \leq 360^\circ$ **[2 marks]**



Turn over ►





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10 $b\%$ of $5a = a\%$ of $(a - b)$

Given that $a > 0$, write a in terms of b .

[4 marks]

Answer _____

11 Expand and simplify fully $(x^3 + y^2)(x^3 - y^2)(x + y)$

[3 marks]

Answer _____





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12 A cone and sphere both have the same radius, r .

volume of the cone : volume of the sphere = 2 : 5

$$\text{Volume of a cone} = \frac{1}{3}\pi r^2 h$$

where r is the radius
 h is the perpendicular height.

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

where r is the radius

Express h , the perpendicular height of the cone, in terms of r . **[4 marks]**

Answer _____

Turn over ►





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13 For a linear sequence,

$$\text{The 5th term} = 360 - 60a$$

$$\text{The 8th term} = 360 - 69a$$

All of the terms of the sequence are negative.

Work out a set of possible values for a .

[4 marks]

Answer _____





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15 The coefficient of x^2 in the expansion of $(3 + ax)^4$ is 12150

Given that $a > 0$, work out the value of a .

[3 marks]

Answer _____

16 Solve $5\cos^2\theta - 3\cos\theta = 0$ for $0^\circ \leq \theta \leq 360^\circ$

[4 marks]

Answer _____





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17 (a) P is the point on the curve $y = 2x^3 - x^2 - 3x$ where $x = -0.5$

Work out the equation of the tangent to the curve at P .

Give your answer in the form $ay + bx = c$ where a , b and c are integers. [5 marks]

Answer _____

17 (b) The tangent at P also intersects the x -axis at Q .

Show that the point Q is also on the curve $y = 2x^3 - x^2 - 3x$ [4 marks]

Turn over ►





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19 Integers are made using some of the digits 1, 2, 3, 5, 8, and 9.

Each integer made

- is greater than 70000
- has no digit repeated
- is even

How many integers can be made?

[4 marks]

Answer _____

$\frac{\quad}{9}$

