

AS Maths Day 1 (C1)

Solve the inequality $3x + 4 > 2x + 6$

AS Maths Day 2 (C1)

Rationalise the denominator of the following expression $\frac{\sqrt{3}}{\sqrt{2}}$

AS Maths Day 3 (C2)

Find the centre and radius of the circle with equation

$$x^2 + 8x + y^2 - 4y + 4 = 0$$

AS Maths Day 4 (C2)

Evaluate the following definite integral

$$\int_2^4 (x^2 + 2x + 4)^2$$

AS Maths Day 5 (C1)

Find the equation of the tangent to the curve $y = x^2 + 2x$ at the point (2,8).

AS Maths Day 6 (C2)

Find the first 4 terms (in ascending powers of x) of $\left(1 + \frac{x}{4}\right)^8$.

Using an appropriate substitution find an approximate value of 1.025.

Using a calculator comment on the degree of approximation.

AS Maths Day 7 (C1)

Factorise $x^3 + 4x^2 - 4x - 16$

AS Maths Day 8 (C1)

Express $2x^2 + 12x + 13$ in the form $a(x + b)^2 + c$. Hence solve $2x^2 + 12x + 13 = 0$.

AS Maths Day 9 (C1)

Which of the following statements about the circle

$(x + 3)^2 + (y - 1)^2 = 4$ is false.

- a) The radius of the circle is 2.
- b) The point $(-3, -1)$ lies on the circle.
- c) The x -coordinate of the centre of the circle is -3 .
- d) The y -coordinate of the centre of the circle is -1 .

AS Maths Day 10 (C1)

Find the coordinate of the vertex of quadratic graph

$$y = x^2 - 4x - 1.$$

AS Maths Day 11 (C1)

Sketch the graph $y = x^3 + 4x^2 + x - 6$.

AS Maths Day 12 (C1)

Find the first three terms of the sequence generated by the recurrence relation $x_{n+1} = \sqrt{x_n^2 + 3x_n}$ where $x_1 = 1$. Give your answers in surd form.

AS Maths Day 13 (C1)

Solve the inequality $x^2 + 2x - 6 > 2$.

AS Maths Day 14 (C2)

Find the quotient and remainder when you divide $x^3 + 5x^2 + 11x + 7$ by $(x + 2)$.

AS Maths Day 15 (C1)

Find the equation of the normal to the curve $y = x^2 - 3x + 1$ at the point $x = 3$.

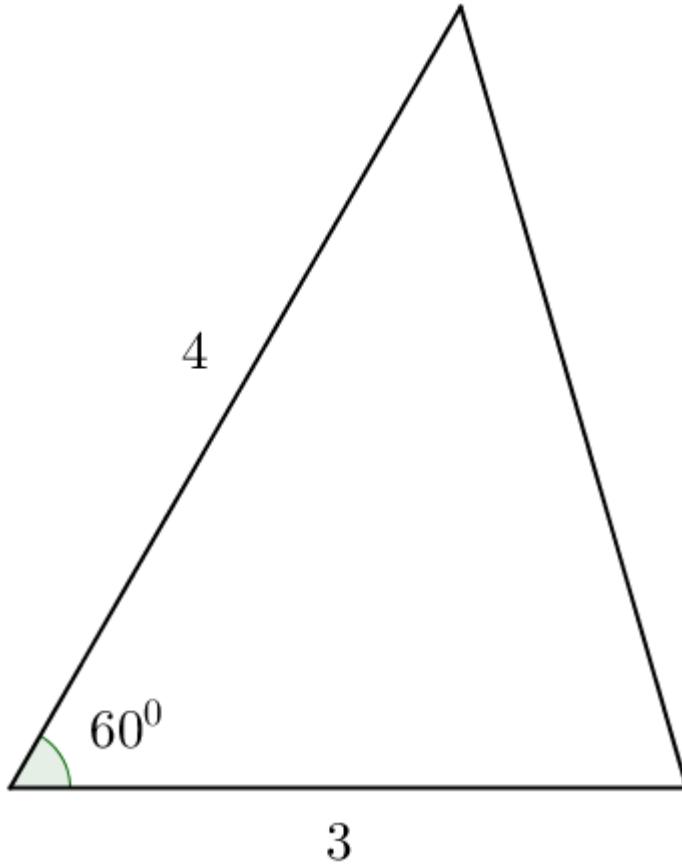
AS Maths Day 16 (C1)

Express the following in the form $a + b\sqrt{5}$

$$\frac{1 - \sqrt{5}}{3 + \sqrt{5}}$$

AS Maths Day 17 (C2)

Find the area of the triangle shown below



AS Maths Day 18 (C2)

Solve the equation $3 \sin\left(\frac{x}{2}\right) = 1$ in the range $0 \leq x \leq 2\pi$.

AS Maths Day 19 (C1)

Solve the equation $a^3 = \sqrt{27}$

AS Maths Day 20 (C1)

The points $A(1,3)$ and $B(4,21)$ lie on the curve $y = x^2 + x + 1$.
1. Find the gradient of the line segment AB .

AS Maths Day 21 (C2)

Find the stationary points of the curve

$$y = \frac{1}{3}x^3 - \frac{1}{2}x^2 - 12x + 4 \text{ and classify them.}$$

AS Maths Day 22 (C2)

Find the following integral, giving each term of the answer in its simplest form.

$$\int 8x^3 + 6x^{\frac{1}{2}} - 5 \, dx$$

AS Maths Day 23 (C2)

Express

$$\log_{10} \left(\frac{1000}{x^{\frac{3}{2}}} \right)$$

in terms of $\log_{10}(x)$.

AS Maths Day 24

For the circle with equation $x^2 - 4x + y^2 - 2y - 20 = 0$ find

a) The radius.

b) The centre of the circle.

c) Where the circle crosses the x – axis.

AS Maths Day 25

Find $\frac{dy}{dx}$ when $y = 2x^2 - 9x + 3$

AS Maths Day 26

Find

$$\int \frac{3}{x^4} + 6\sqrt{x} \, dx$$

AS Maths Day 27

Find the equation of the line that passes through the point (3,6) and has gradient $m = 4$

AS Maths Day 28

Find the equation of the line that is perpendicular to the line in the question for Day 27 and passes through the point $(4,2)$.

AS Maths Day 24