



Maths Paper 1 – Grade 7+

Prove that the product of two consecutive even numbers is a multiple of 4

The line L is a tangent to the circle $x^2 + y^2 = 34$ at the point A.
A is the point (2,6)

Find the equation of line L

Solve

$$x^2 > 3(x + 6)$$

Simplify

$$(x^2 + 2)^2 - (x^2 - 5)^2$$

$$f(x) = 4x + 7$$
$$g(x) = \sqrt{x + 4}$$

Show that $fg^{-1}(x) = 4x^2 - 9$

Solve

$$x^2 - 6x - 8 = 0$$

Give your answer in the form $a \pm \sqrt{b}$

1,2,3,4,5,6

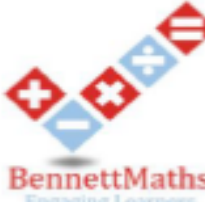
Two numbers from the list above are selected and multiplied together.

Work out the probability that the result is an even number.

Express $\sqrt{75} + \frac{12}{\sqrt{3}}$ in the form $a\sqrt{3}$.
Where a is an integer

Solve

$$3^{4x} = \frac{1}{9}$$

|  Examples/ Key words | <u>Maths Paper 1 - Higher</u> | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|----------------------|----------------------|-----------|-----|-----|-----|---|---------------|----------------------|----------------------|---|-----|---|----------------------|----------------------|---------------|---|-----|---|----------------------|---|------------|-----------|--|
| Convert 3200 into standard form $3200 = 3.2 \times 10^3$ Work out $4.2 \times 10^4 + 8 \times 10^3$. Give your answer in standard form $42,000 + 8000 = 50,000$ $50,000 = 5 \times 10^4$ | To simplify a surd – always find the largest square number that it can be divided by. E.g. $\sqrt{200} = \sqrt{100} \times \sqrt{2} = 10\sqrt{2}$ | Estimate = make the question easier by rounding Evaluate = work out the answer Express = Write in the different way Simplify = Change the appearance | | | | | | | | | | | | | | | | | | | | | | | | |
| Volume of a cube = base x height x depth or length ³ Surface area of a cuboid = The sum of the area of the 3 pairs of congruent rectangles | The volume of a shape is 20cm ³ . The mass of the shape is 120g. Find the density. Density = g:cm ³ 120:20 6:1 Density = 6g/cm ³ | Angles in regular polygons: Sum of the interior angles = $(n - 2) \times 180$ To find an interior angle = $\frac{\text{total}}{n}$ n= number of angles/sides. Sum of the exterior angles = 360° To find an exterior angle = $\frac{360}{n}$ n= number of angles/sides | | | | | | | | | | | | | | | | | | | | | | | | |
| Gradient of a curve = draw tangent of the curve and find the gradient <u>$\frac{\text{difference in } y}{\text{difference in } x}$</u> | <table border="1"><thead><tr><th></th><th>0°</th><th>30°</th><th>45°</th><th>60°</th><th>90°</th></tr></thead><tbody><tr><td>Sin</td><td>0</td><td>$\frac{1}{2}$</td><td>$\frac{\sqrt{2}}{2}$</td><td>$\frac{\sqrt{3}}{2}$</td><td>1</td></tr><tr><td>Cos</td><td>1</td><td>$\frac{\sqrt{3}}{2}$</td><td>$\frac{\sqrt{2}}{2}$</td><td>$\frac{1}{2}$</td><td>0</td></tr><tr><td>Tan</td><td>0</td><td>$\frac{\sqrt{3}}{3}$</td><td>1</td><td>$\sqrt{3}$</td><td>Undefined</td></tr></tbody></table> | | 0° | 30° | 45° | 60° | 90° | Sin | 0 | $\frac{1}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{3}}{2}$ | 1 | Cos | 1 | $\frac{\sqrt{3}}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{1}{2}$ | 0 | Tan | 0 | $\frac{\sqrt{3}}{3}$ | 1 | $\sqrt{3}$ | Undefined | $x^{\frac{1}{3}} = \sqrt[3]{x}$ $x^{-\frac{1}{3}} = \frac{1}{\sqrt[3]{x}}$ $x^{\frac{2}{3}} = (\sqrt[3]{x})^2$ $x^{-4} = \frac{1}{x^4}$ |
| | 0° | 30° | 45° | 60° | 90° | | | | | | | | | | | | | | | | | | | | | |
| Sin | 0 | $\frac{1}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{3}}{2}$ | 1 | | | | | | | | | | | | | | | | | | | | | |
| Cos | 1 | $\frac{\sqrt{3}}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{1}{2}$ | 0 | | | | | | | | | | | | | | | | | | | | | |
| Tan | 0 | $\frac{\sqrt{3}}{3}$ | 1 | $\sqrt{3}$ | Undefined | | | | | | | | | | | | | | | | | | | | | |