Pure Mathematics 2

A-Level Mathematics · Vocabulary in context

Word	Example
Pure Mathematics /pjʊə ˌmæθɪˈmætɪks/	**Pure Mathematics** studies numbers, shapes and patterns for their own sake.
logarithms /ˈlɒgərɪθəmz/	**Logarithms** turn multiplication into addition.
exponential function /ˌekspəˈnenʃl ˈfʌŋkʃn/	The **exponential function** e^x is its own derivative. e^x
modulus /ˈmɒdjʊləs/	The **modulus** $\|x\|$ is the size of x without its sign. $\|x\|$ x
polynomial /ˌpɒlɪˈnəʊmɪəl/	$3x^2 + 2x - 1$ is a **polynomial**. $3x^2 + 2x - 1$
degree /dɪˈgriː/	A higher **degree** gives a better approximation.
quotient /ˈkwəʊʃənt/	When you divide 12 by 3, the **quotient** is 4. 12 3 4
remainder /rɪˈmeɪndə/	14 divided by 5 leaves a **remainder** of 4. 14 5 4
remainder theorem /rɪˈmeɪndə ˈθɪərəm/	By the **remainder theorem**, $x^3 - 2$ divided by $x - 1$ leaves remainder -1. $x^3 - 2$ $x - 1$ -1
factor theorem /ˈfæktə ˈθɪərəm/	The **factor theorem** says f(a) = 0 exactly when (x-a) is a factor of f(x). f(a) = 0 (x-a) f(x)
indices /ˈɪndɪsiːz/	The rules of **indices** say $x^2 \times x^3 = x^5$. $x^2 \times x^3 = x^5$
laws of logarithms /lɔːz ɒv ˈlɒgərɪθəmz/	The **laws of logarithms** say log ab = log a + log b. log ab = log a + log b

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natural logarithm /ˈnætʃərəl ˈlɒgərɪθəm/	The **natural logarithm** ln x uses base e. ln x e
linear form /ˈlɪnɪə fɔːm/	Taking logs puts $y = ax^n$ into **linear form**. $y = ax^n$
secant /ˈsiːkənt/	The **secant** of x is 1 divided by cos x. x 1 cos x
cosecant /ˈkəʊsekənt/	The **cosecant** of x is 1 divided by sin x. x 1 sin x
cotangent /ˈkəʊtændʒənt/	The **cotangent** of x is cos x divided by sin x. x cos x sin x
trigonometric identities /ˌtrɪgənəʊˈmetrɪk aɪˈdentɪtiz/	**Trigonometric identities** like $\sin^2 x + \cos^2 x = 1$ are always true. $\sin^2 x + \cos^2 x = 1$
compound angle /ˈkɒmpaʊnd ˈæŋgl/	sin(A + B) is a **compound angle** formula. sin(A + B)
double angle /ˈdʌbl ˈæŋgl/	sin 2A = 2 sin A cos A is a **double angle** formula. sin 2A = 2 sin A cos A
R-formula /ɑː ˈfɔːmjʊlə/	The **R-formula** writes 3 sin x + 4 cos x as 5 sin(x + α). 3 sin x + 4 cos x 5 sin(x + α)。
product rule /ˈprɒdʌkt ruːl/	Use the **product rule** to differentiate x · sin x. x · sin x
quotient rule /ˈkwəʊʃənt ruːl/	Use the **quotient rule** to differentiate sin x / x. sin x / x
parametric equations /ˌpærəˈmetrɪk ɪˈkweɪʒnz/	In **parametric equations**, x and y are both written in terms of t. x y t
implicitly /ɪmˈplɪsɪtli/	$x^2 + y^2 = 25$ defines y **implicitly**. $x^2 + y^2 = 25$ y
trapezium rule /trəˈpiːzɪəm ruːl/	The **trapezium rule** estimates an integral using straight-sided strips.

Word	Example
root /ruːt/	The number 3 is a **root** of $x^2 = 9$. 3 $x^2 = 9$
sign change /saɪn tʃeɪndʒ/	A **sign change** in f(x) shows a root lies between the two values. f(x)
iteration /ˌɪtəˈreɪʃn/	A loop is a kind of **iteration**.
iterative formula /ˈɪtərətɪv ˈfɔːmjʊlə/	The **iterative formula** $x_{n+1} = \sqrt{(x_n + 2)}$ gives each new value from the last. $x_{n+1} = \sqrt{(x_n + 2)}$
converge /kənˈvɜːdʒ/	The values 1.5, 1.41, 1.414 **converge** to $\sqrt{2}$. 1.5, 1.41, 1.414 $\sqrt{2}$
integration by substitution /ˌɪntɪˈgreɪʃn baɪ ˌsʌbstɪˈtjuːʃn/	Use **integration by substitution** with $u = x^2 + 1$. $u = x^2 + 1$

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