4 · Pure Mathematics 4

Pearson Edexcel · International A-Level · Pure Mathematics · Vocabulary in context

Word	Example
Proof by contradiction /pruːf baɪ ˌkɒntrəˈdɪkʃn/	**Proof by contradiction** assumes the opposite and finds a problem.
irrational /ɪˈræʃənl/	The square root of 2 is **irrational** because it cannot be written as a fraction of two integers. $\sqrt{2}$
Decompose /ˌdiːkəmˈpəʊz/	**Decompose** the fraction into partial fractions.
partial fractions /ˈpɑːʃl ˈfrækʃnz/	Use **partial fractions** to split $1/(x(x+1))$ into $1/x - 1/(x+1)$. $1/(x(x+1))$ $1/x - 1/(x+1)$
repeated factor /rɪˈpiːtɪd ˈfæktə/	$(x-1)^2$ is a **repeated factor**. $(x-1)^2$
Improper fractions /ɪmˈprɒpə ˈfrækʃnz/	**Improper fractions** need division before using partial fractions.
Parametric equations /ˌpærəˈmetrɪk ɪˈkweɪʒnz/	**Parametric equations** give x and y in terms of t. t x y
Cartesian /kɑːˈtiːzɪən/	Turn the parametric equations into a **Cartesian** equation.
rational /ˈræʃənl/	A **rational** number can be written as a fraction of two integers, such as $3/4$. $3/4$
Implicit differentiation /ɪmˈplɪsɪt ˌdɪfəˌrenʃɪˈeɪʃn/	**Implicit differentiation** works when y is mixed with x. y x
separable /ˈsepərəbl/	$dy/dx = xy$ is **separable**. $dy/dx = xy$

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particular solution /pəˈtɪkjʊlə səˈluːʃn/	Use the starting value to find c and get the **particular solution**. c
Connected rates of change /kəˈnektɪd reɪts ɒv tʃeɪndʒ/	**Connected rates of change** use the chain rule.
Substitution /ˌsʌbstɪˈtjuːʃn/	**Substitution** can turn a hard integral into an easy one.
Integration by parts /ˌɪntɪˈgreɪʃn baɪ pɑːts/	**Integration by parts** helps with products like $x \cdot e^x$. $x \cdot e^x$
volume of revolution /ˈvɒljuːm ɒv ˌrevəˈluːʃn/	Find the **volume of revolution** by rotating this region about an axis.
vector /ˈvektə/	A **vector** describes both size and direction.
magnitude /ˈmægnɪtjuːd/	The **magnitude** of the vector $3i + 4j$ is 5. $3i + 4j$ 5
unit vector /ˈjuːnɪt ˈvektə/	A **unit vector** has a magnitude of 1, such as i or j. 1 i j
parallel /ˈpærəlel/	**Parallel** lines have equal gradients and never meet.
scalar product /ˈskeɪlə ˈprɒdʌkt/	The **scalar product** of perpendicular vectors is zero.
position vector /pəˈzɪʃn ˈvektə/	The **position vector** of point A tells you where A is from the origin. A A

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