3 · Pure Mathematics 3

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

Word	Example
÷ **rational expression** /ˈræʃənl ekˈspreʃn/	$(x + 1)/(x - 2)$ is a **rational expression**. $(x + 1)/(x - 2)$
function /ˈfʌŋkʃn/	A **function** returns a value.
domain /dəˈmeɪn/	Leave zero out of the **domain** when x is on the bottom of a fraction. x
range /reɪndʒ/	The **range** of $f(x) = x^2$ is all values greater than or equal to zero. $f(x) = x^2$
composition /ˌkɒmpəˈzɪʃn/	The **composition** fg(x) means apply g, then f. fg(x) g f
inverse function /ɪnˈvɜːs ˈfʌŋkʃn/	The **inverse function** undoes the original function.
modulus /ˈmɒdjʊləs/	The **modulus** of $3 + 4i$ is 5. $3 + 4i$ 5
combined transformations /kəmˈbaɪnd trænsfɔːˈmeɪʃnz/	**Combined transformations** apply two changes to a graph.
÷ **reciprocal functions** /rɪˈsɪprəkl ˈfʌŋkʃnz/	$y = \sec x$ is one of the **reciprocal functions**. $y = \sec x$
— **asymptote** /ˈæsɪmptəʊt/	The graph of $y = e^x$ has a horizontal **asymptote** at $y = 0$. $y = e^x$ $y = 0$
restricted domain /rɪˈstrɪktɪd dəˈmeɪn/	A **restricted domain** makes the function one-to-one.

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harmonic form /hɑːˈmɒnɪk fɔːm/	Write 3 sin x + 4 cos x in **harmonic form** as R sin(x + α). 3 sin x + 4 cos x R sin(x + α)
compound angle /ˈkɒmpaʊnd ˈæŋgl/	sin(A + B) is a **compound angle** formula. sin(A + B)
log plot /lɒg plɒt/	A **log plot** turns an exponential curve into a straight line.
model /ˈmɒdl/	A **model** uses maths to describe a real situation.
initial value /ɪˈnɪʃl ˈvæljuː/	The **initial value** is the amount when t = 0. t = 0
long-run floor /lɒŋ rʌn flɔː/	The **long-run floor** is the value the model levels off at.
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
chain rule /tʃeɪn ruːl/	Use the **chain rule** for a function inside another function.
implicit differentiation /ɪmˈplɪsɪt ˌdɪfəˌrenʃɪˈeɪʃn/	Use **implicit differentiation** when y is not on its own, as in $x^2 + y^2 = 25$. y x^2 $+ y^2 = 25$。
recognition forms /ˌrekəgˈnɪʃn fɔːmz/	Learn the **recognition forms**, like f′(x)/f(x), for integration. f′(x)/f(x)
double angle /ˈdʌbl ˈæŋgl/	sin 2A = 2 sin A cos A is a **double angle** formula. sin 2A = 2 sin A cos A
sign change /saɪn tʃeɪndʒ/	A **sign change** in f(x) shows a root lies between the two values. f(x)

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Word	Example
🔁 **iteration** /ˌɪtəˈreɪʃn/	A loop is a kind of **iteration**.
• **fixed point** /fɪkst pɔɪnt/	The iteration settles at a **fixed point**.

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