You can disprove a statement by finding a single counter example. However, any number of examples does not prove a general statement.

You will be given a formula booklet in the exam so you don’t have to remember all formulae. The booklet also contains several probability tables. You should familiarise yourself with the contents of the booklet.

You can use your calculator to:
- Solve a quadratic
- If available, plot a graph and locate its important features
- Evaluate definite integrals
- Iterate a recurrence relation
- Calculate averages, quartiles and standard deviations
- Calculate binomial and normal probabilities

Only accuracy marks will be available when a calculator can be used.

Calculators

Use

A question may tell you what methods to use to answer it.

Here the examiner wants to see the Newton-Raphson method used to solve the equation \( \ln x = -e^x \) [4]

Here the examiner wants to see an algebraic solution based on using the identity \( \cos'x = 1 - \sin'x \) to obtain the equation \( 3\sin x - 1)(2\sin x - 1) = 0 \) [4]

The language of mechanics

Mechanics questions use certain common words as code for assumptions that are being made, for example, particle, smooth, uniform, light, etc. You need to know what these words mean in context in order to answer the questions.

TIP

You can use your calculator to:

Examiners often award method marks (M) – for your workings – and accuracy marks (A) – for the right answer. You can still get M marks with a wrong answer, so always show your workings.

The language of mechanics

Mechanics questions use certain common words as code for assumptions that are being made, for example, particle, smooth, uniform, light, etc. You need to know what these words mean in context in order to answer the questions.

Pure, statistics and mechanics questions can all refer to a mathematical model of a situation. Models almost always simplify the situation and may not give a good description of the situation.

The temperature, \( 7 \) °C of a cup of tea at time, \( t \), min, is modelled as, \( T(t) = 7 + Te^{-kt} \)

(a) Interpret the constant \( T_0 \) \[1\]

(b) Is the model suitable? You must give your reason. \[1\]

(c) Suggest one way in which the model could be improved. \[1\]

Here the examiner is looking for answers in the context of the situation being modelled.

(a) \( T_0 \) is the initial temperature of the tea, \( T(0) = T_0 \).

(b) No, as \( t \to \infty, T(t) \to 0 \) which is unrealistic; it would tend to room temperature \(-20\)°C.

(c) Let \( T_r \) be room temperature, a better model is \( T(t) = T_r + (T_0 - T_r)e^{-kt} \)

The temperature, \( 7 \) °C of a cup of tea at time, \( t \), min, is modelled as, \( T(t) = 7 + Te^{-kt} \)

TIP

The word estimate may be used in a question that involves a model but an exact calculation in the context of the model is expected.

Edexcel A Level Maths: how to succeed in the exam

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