

This exam scores the sentence as much as the number: a rate of change described in words, a concavity justified, a model’s parameters reported to three decimals. Everything below is a rule the readers apply.

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Presentation – the rules that apply to every question

- ✗ Reporting a parameter to two decimal places.
- ✓ **Three places after the decimal point, by rounding or truncating.**
Stated in the general scoring notes of every question; an under-rounded value loses the point on its own.

SG 2 years
- ✗ Worrying that 2.000 should be written differently.
- ✓ **Trailing zeros need not be reported: 2.000, 2.00, 2.0 and 2 are all accepted.**
The guidelines say so explicitly – a decimal presentation error is only a fault when the value itself is wrong.

SG 2 years
- ✗ Writing a fraction whose bar could span either the numerator or more.
- ✓ **Size the bar to exactly what it covers, and bracket substituted expressions.**
The guidelines require parentheses to be used correctly and fraction bars to be clearly and correctly proportioned.

SG 2 years
- ✗ Giving an angle in degrees.
- ✓ **Angle measures are assumed to be in radians unless the question says otherwise.**
Stated in the general scoring notes, along with the requirement that solutions be real numbers.

SG 2 years
- ✗ Answering part (ii) with a value that contradicts part (i).
- ✓ **Use your own earlier value consistently, including the endpoint your working used.**
The guidelines award the second point only when the estimate is consistent with both the reported value and the endpoint used.

SG 2 years
- Where a part says no supporting work is required, the answer alone earns the point – do not spend time justifying it.

SG2024

1 · Polynomial and Rational Functions

- ✗ Saying a function is increasing when the question asked about its RATE of change.
- ✓ **Distinguish them: the function rises while its rate of change may be falling.**
The guidelines award the point for ‘positive and increasing’ or its equivalent – the two properties are scored together.

SG2024
- ✗ Answering a concavity question with ‘the graph is concave down’ alone.
- ✓ **Connect it to the rate of change: concave down means the rate of change is decreasing.**
The guidelines state the point is not earned for the concavity statement by itself.

SG2024
- ✗ Describing end behaviour in words that could mean either direction.
- ✓ **Write the limit:** $\lim_{x \rightarrow \infty} g(x) = -\infty$.
The guidelines list the accepted limit notations, all of which state the direction unambiguously.

SG 2 years
- ✗ Finding a vertical asymptote without checking the numerator.
- ✓ **A shared factor gives a HOLE, not an asymptote.**
This distinction decides the shape of the whole graph and is a standard discriminator in the unit.

CED 1.7
- ✗ Assuming a polynomial changes sign at every zero.
- ✓ **An even multiplicity touches the axis and turns back; an odd one crosses.**
Sign analysis built on the wrong assumption gives the wrong intervals throughout.

CED 1.5
- ✗ Comparing two functions’ growth by their values at one point.
- ✓ **Compare their rates of change, or their behaviour as x grows.**
A single point never distinguishes a polynomial from an exponential, which is the comparison this unit tests.

CED 1.13
- ✗ Answering a left-endpoint question by describing the interior of the domain.
- ✓ **Say what happens AT the endpoint the question names.**
The guidelines state a response focusing on the left endpoint is eligible for the point – the endpoint is the answer.

SG2024

2 · Exponential and Logarithmic Functions

- ✗ Justifying an exponential model by saying the values ‘grow fast’.
- ✓ **Show the ratio is constant:** $f(n + 1) = 0.5f(n)$, so successive outputs fall by a factor of 0.5.
The guidelines require the reasoning to demonstrate that the RATIO applies, and print this as the accepted form.

SG2024

- ✗ Fitting a logarithmic model and reporting only the final function.
- ✓ **Show both equations you solved for a and b , then the model.**
The guidelines award a point for the two equations, separately from the values they produce.

SG2024

- ✗ Solving an exponential equation by dividing instead of taking logarithms.
- ✓ **Take the log of both sides, then use the power rule to bring the exponent down.**
The structural step is what the unit tests, and the arithmetic route usually cannot be completed.

CED 2.11

- ✗ Treating $\ln(a + b)$ as $\ln a + \ln b$.
- ✓ **The log of a PRODUCT splits; the log of a sum does not.**
This is the most persistent algebraic error in the unit and it invalidates everything after it.

CED 2.10

- ✗ Reporting a model’s prediction beyond the data it was built from with no caveat.
- ✓ **Say the prediction is an extrapolation and may not hold.**
The reasoning must connect the model’s behaviour to the context, which is what the guidelines award the point for.

SG2024

3 · Trigonometric and Polar Functions

- ✗ Solving $\sin x = k$ and giving one solution.
- ✓ **Give every solution in the interval, and add the period if the question asks generally.**
The guidelines require the supporting work to show the general form before the specific values.

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- ✗ Reading amplitude and midline from the equation without checking the vertical shift.
- ✓ **The midline is the constant added; the amplitude is the coefficient’s magnitude.**
The two are read from different parts of the expression, and swapping them changes every value.

CED 3.5

- ✗ Converting to polar form and losing the quadrant.
- ✓ **Check the signs of x and y before choosing θ .**
The calculator’s inverse tangent returns one branch, which is the wrong quadrant half the time.

CED 3.13

4 · Functions Involving Parameters, Vectors, and Matrices

- ✗ Composing functions in the wrong order.
- ✓ **$f(g(x))$ means apply g first.**
The order is the whole content of the question, and the reverse composition is usually also a valid function, so nothing looks wrong.

CED 4.5

- ✗ Finding an inverse and not restricting the domain.
- ✓ **State the domain on which the original function is one-to-one.**
Without the restriction the inverse is not a function, which is what the unit is about.

CED 4.4

- ✗ Multiplying matrices in either order.
- ✓ **Matrix multiplication is not commutative – AB and BA are usually different.**
The order encodes which transformation is applied first, so reversing it changes the answer.

CED 4.12

- ✗ Giving a vector’s magnitude where the question asked for its components.
- ✓ **Read which is wanted: a magnitude is one number, components are an ordered pair.**
Both are computed from the same working, so the wrong one is easy to write and earns nothing.

CED 4.9

- ✗ Describing a parametric path without saying which way it is traced.
- ✓ **State the direction as t increases.**
The orientation is part of what a parametric description carries, and it is scored separately from the curve.

CED 4.7

- ✗ Giving a residual’s sign without saying what it means.
- ✓ **A positive residual means the model UNDERestimates the actual value at that point.**
The interpretation is the scored part; the sign alone is arithmetic.

CED 2.6

- ✗ Describing a transformation as ‘moved right’ without the amount.
- ✓ **Give the direction and the amount, and note that $f(x - h)$ shifts RIGHT by h .**
The inside-the-bracket sign reverses the direction, which is the standard trap in this unit.

f(x–h) h

CED 2.14

■ Where the question gives a graph, using it is optional. The guidelines state that use of the graph is not required, so an algebraic route is equally acceptable.

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✗ Answering a ‘describe’ question with a formula.

✓ **Describe it in words: what the quantity does, over what interval, and how fast.**

The rubric awards descriptions for their content, and a formula does not state a behaviour.

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CED 1.3