

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. 本科不仅看结果, 也看表述: 变化率要说清楚, 凹凸性要有理由, 参数保留三位小数。

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.

小数保留三位

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.

末位零可以省略

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.

括号和分数线要清楚

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.

角度默认用弧度

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.

后一问要与前一问一致

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

注明不需过程的题只写答案

SG2024

- ✗ 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.

函数递增 ≠ 变化率递增

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.

凹凸性要联系变化率

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.

用极限记号写终末行为

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.

共同因式是空洞不是渐近线

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.

偶重根不变号

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.

比较增长要看变化率

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.

端点问题就写端点

SG2024

2 · Exponential and Logarithmic Functions 指数函数与对数函数		
✗	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. 指数模型要证明比值恒定	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. 要写出联立的两个方程	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. 指数方程要取对数	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. 对数只能拆乘积	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. 外推要说明局限	SG2024
3 · Trigonometric and Polar Functions 三角函数与极坐标函数		
✗	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. 三角方程有多个解	SG2024
✗	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. 中线是常数项, 振幅是系数	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. 极坐标要判断象限	CED 3.13

4 · Functions Involving Parameters, Vectors, and Matrices 涉及参数、向量与矩阵的函数		
✗	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. 复合函数先算里面的	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. 反函数要限定定义域	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. 矩阵乘法不可交换	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. 分清模长与分量	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. 参数曲线要说明方向	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. 残差为正说明模型低估	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. $f(x-h)$ 是右移 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.	
	可以不用图, 用代数也行	SG2024

- ✗ 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.

“ 描述 ” 要用文字 CED 1.3