

CIE  
Further Pure Mathematics 2  
分类真题  
2020-2022 册

A Level Clouds 出品

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# **Chapter 1**

## Hyperbolic Functions

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- Q1: 9231/21/S22**
- 2     **(a)** Starting from the definitions of cosh and sinh in terms of exponentials, prove that
- $\cosh 2x = 2 \sinh^2 x + 1.$  [3]
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- (b)** Find the set of values of  $k$  for which  $\cosh 2x = k \sinh x$  has two distinct real roots. [5]
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[illegible]

- [illegible]

# **Chapter 2**

## **Matrices**

**Q1: 9231/21/S20**

- 8 (a) Find the values of  $a$  for which the system of equations

$$3x + y + z = 0,$$

$$ax + 6y - z = 0,$$

$$ay - 2z = 0,$$

does not have a unique solution.

[3]

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The matrix  $\mathbf{A}$  is given by

$$\mathbf{A} = \begin{pmatrix} 3 & 1 & 1 \\ 0 & 6 & -1 \\ 0 & 0 & -2 \end{pmatrix}.$$

- (b) Use the characteristic equation of  $\mathbf{A}$  to find the inverse of  $\mathbf{A}^2$ .

[4]

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