NSW Education Standards Authority

**2022** **HIGHER SCHOOL CERTIFICATE EXAMINATION**

# Mathematics Extension 1

**General Instructions**

* Reading time -- 6 minutes
* Working time -- 64 minutes
* Write using black pen
* Calculators approved by NESA may be used
* A reference sheet is provided at the back of this paper
* For questions in Section II, show relevant mathematical reasoning and/or calculations
* Write your Centre Number and Student Number on all Writing Booklets attached

**Total marks:**
**38**

**Section I -- 6 marks**

* Attempt Questions 1-6
* Allow about 6 minutes for this section

**Section II -- 32 marks**

* Attempt Questions 7-9
* Allow about 58 minutes for this section

## Section I

**6 marks**
**Attempt Questions 1--6**
**Allow about 6 minutes for this section**

Use the multiple-choice answer sheet for Questions 1--6.

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**1.** The polynomial $x^3 - x^2 - 16x + 16$ does not have a root at which value of x?

**(A)** 1

**(B)** 4

**(C)** -4

**(D)** -1

**2.** The polynomial $x^3 - 5x^2 - 2x + 24$ does not have a root at which value of x?

**(A)** -2

**(B)** 3

**(C)** 4

**(D)** 1

**3.** The polynomial $x^3 + 4x^2 + x - 6$ does not have a root at which value of x?

**(A)** 1

**(B)** -2

**(C)** -3

**(D)** -1

**4.** The polynomial $x^3 - x^2 - 14x + 24$ does not have a root at which value of x?

**(A)** 3

**(B)** -4

**(C)** 2

**(D)** -2

**5.** The polynomial $x^3 - 2x^2 - 11x + 12$ does not have a root at which value of x?

**(A)** 1

**(B)** 4

**(C)** -3

**(D)** -1

**6.** The polynomial $x^3 + 5x^2 - 2x - 24$ does not have a root at which value of x?

**(A)** -3

**(B)** -4

**(C)** 2

**(D)** -1