

2024-2025 中三
下學期統測一
數學

2024-2025

中三級下學期統測一

數學

試題答題簿

本試卷中文試題必須用中文作答

英文試題必須用英文作答

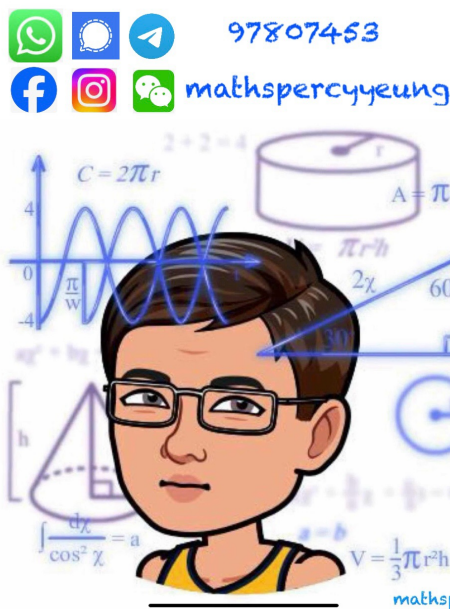
二零二五年三月二十四日

一小時完卷

(上午八時十五分至上午九時十五分)

考生須知

- (一) 宣布開考後，考生須首先在第 1 頁的適當位置填寫學生姓名、班別及學號。
- (二) 本試卷各題均須作答，答案須寫在本試題答題簿中預留空位內。
- (三) 除特別指明外，須詳細列出所有算式。數值答案須用真確值，或準確至三位有效數字的近似值表示。
- (四) 本試卷的附圖不一定依比例繪成。



部 份	分 數
甲 (1-2)	
甲 (3-10)	
甲部	/50
乙部	/20
全卷	/70

甲部 (50 分)

1. 解聯立方程 $\begin{cases} 3x-5y=27 \\ 3x+2y=6 \end{cases}$ 。
- (3 分)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

2. 在圖 1， $\triangle ABD$ 和 $\triangle BCD$ 都是直角三角形。 $AB = 5$ ， $AD = 3$ 及 $BC = 1$ 。求 CD 。

(如有需要，答案以根式表示。)

(3 分)

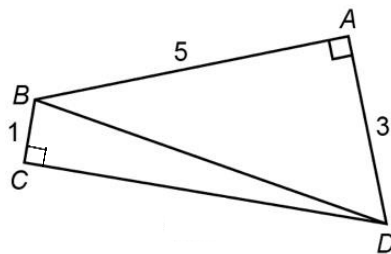


圖 1

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

3. (a) 因式分解

(i) $6a^2 - 5ab - 6b^2$,

(ii) $12a^2 + 11ab + 2b^2$.

(b) 由此，因式分解 $(6a^3 - 5a^2b - 6ab^2) + (24a^2b + 22ab^2 + 4b^3)$ 。

(5 分)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4. (a) 化簡 $(-2x^4y^{-3})^{-2} \times (x^{-1}y^{-2})^{-3}$ 並以正指數表示答案。

(b) 若 n 為一正整數，化簡 $\frac{3^{n+3} \times 9^{n+1}}{9^{3n+4}}$ 。

(6 分)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

5. Figure 2 shows a right frustum.

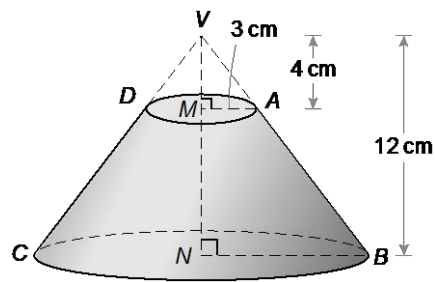


Figure 2

- Find the base radius NB .
- Find the volume of the frustum.
- Find the total surface area of the frustum.

(Express your answers in terms of π if necessary.)

(7 marks)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

7. In Figure 4, D is a point lying on AB and CD is the height of $\triangle ABC$. Find the value of k .

(3 marks)

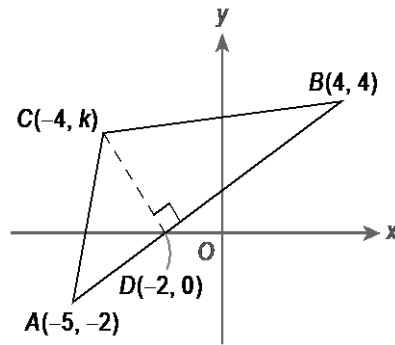


Figure 4

8. Three points $A(-12, 5)$, $B(k-1, k)$ and $C(4, -11)$ are collinear.

(a) Find the value of k .

(b) Romeo claims that $AB : AC = 1 : 3$. Do you agree? Explain your answer.

(6 marks)

乙部 (20 分)

11. Figure 6 shows solid A formed by a hemisphere and a right cylinder with a common base of base radius 3 m. The height of solid A is 5 m. It is given that solid B is similar to solid A, and the ratio of the base area of solid A to that of solid B is 9 : 25.

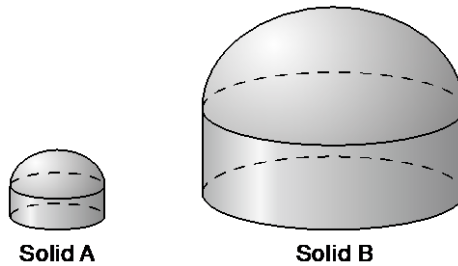


Figure 6

- (a) Find the volume of solid A. (2 marks)
- (b) Find the volume of solid B. (3 marks)
- (c) Find the total surface area of solid B. (3 marks)
- (d) Solid C is formed by removing a cylinder of volume $8\pi \text{ m}^3$ from the bottom of solid A while solid D is formed by removing a cylinder of volume $40\pi \text{ m}^3$ from the bottom of solid B. Are solid C and solid D similar? Explain your answer. (3 marks)

(Express your answers in terms of π if necessary.)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a full page of a document template designed for handwriting practice. It features a series of evenly spaced, horizontal grey lines extending across the entire width of the page. The lines are thin and light, providing a guide for letter height without being distracting. There are no margins, text, or other markings present on the page.

Lined area for writing answers, consisting of multiple horizontal lines.

試卷完