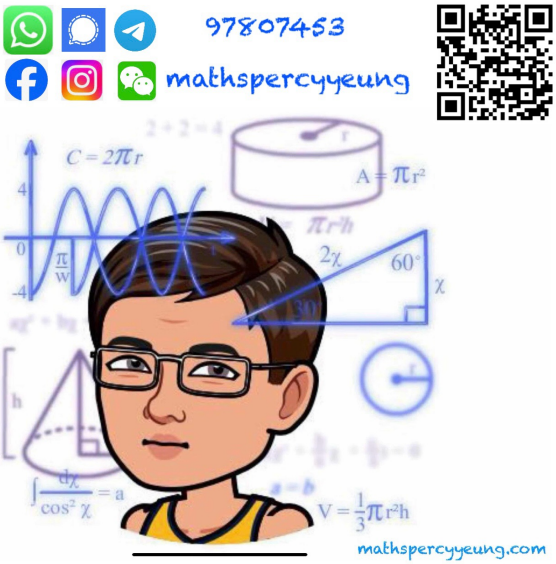
TT F4 First term Ch1-4 revision 2025-26

Exam-type

29. Find the real part of $i^5 + 2i^{10} - 3i^{15} + 4i^{20}$.

34. If $(3 + 2i)(x + yi) = 3 - 11i$, find the values of the real numbers x and y.



36. **(a)** Simplify $\frac{9 - 2i}{4 + i}$ and express the answer in the form $a + bi$.

(b) If $4x + i = \frac{9 - 2i}{4 + i}(3y + xi)$, find the values of the real numbers x and y.

9. L with inclination 45° passes through $(2\ ,\ -8)$.

Exam-type

34. The straight lines L_1: $ax - 3y + b = 0$ and L_2: $3x + 5y - 16 = 0$ are perpendicular to each other. L_1 cuts the x-axis and the y-axis at $P(-6\ ,\ 0)$ and Q respectively.

(a) Find the values of a and b.

Explain **(b)** Is L_2 the perpendicular bisector of PQ? Explain your answer.

Exam-type

35. The straight line L_1 is perpendicular to the straight line L_2: $2x - 3y - 8 = 0$ and intersects L_2 at a point lying on the x-axis.

(a) Find the equation of L_1.

(b) Find the area of the region bounded by L_1, the x-axis and the y-axis.

44. The equation of the straight line L is $4x - y + 3 = 0$. Two points $M(2\ ,\ 6)$ and $N(0\ ,\ 6)$ are given. The straight line ℓ passes through M and is parallel to L. P is a point lying on ℓ such that $MP = NP$.

(a) Find the equation of ℓ.

(b) Find the coordinates of P.

Explain **(c)** Is $\triangle MPN$ a right-angled triangle with $\angle MPN = 90°$? Explain your answer.

Ch 3

40. It is given that the graph of $y = x^2 + 2px - p + 2$ touches the x-axis at only one point.

(a) Find the two possible values of p.

(b) Find the x-intercept of the corresponding graph for each value of p.

Exam-type

53. α and β are the roots of the equation $x^2 - 4x - 2 = 0$. Find the values of the following expressions.

(a) $\alpha^2 + \beta^2$ **(b)** $\alpha^3 + \beta^3$ **(c)** $\alpha^2 + 4\beta - 2$

Ch 4

26. It is given that $f(x) = -x^2 + kx + 7$ and $f(1) - f(5) = 4$, where k is a constant.

(a) Find the value of k.

(b) Find the value(s) of a such that $f(a) = 3$.
(*Leave the radical sign '$\sqrt{\ }$' in the answers.*)

33. Let $f(x) = x + 5$ and $g(x) = x^2 - x$.

(a) Find $f(x - 1)$ and $g(x + 2)$.

(b) Solve the equation $g(x + 2) - f(x - 1) = 13$.