



Test3/MATH1011/22-23/1st

THE UNIVERSITY OF HONG KONG  
DEPARTMENT OF MATHEMATICS

MATH1011 Test 3

- Name: \_\_\_\_\_ University number: \_\_\_\_\_
- Answer all questions.
- Use a blue or black pen for handwritten answers; avoid other colours. Don't use pencil.
- Write your answer in the space provided.
- No books and notes are allowed to use.
- Time allowed: 40 min

1. Find the indefinite integral. Each question carries 2 marks.

(a)  $\int \frac{9x^2 + 15}{x^3 + 5x} dx.$

(b)  $\int x(3x - 1)^{2022} dx.$

(c)  $\int x^2 e^{2x} dx.$

(d)  $\int x^2 \ln(2x) dx.$

(e)  $\int \frac{8x^2 + 13x + 6}{6x^3 + 19x^2 + 16x + 4} dx.$

(f)  $\int \frac{dx}{x \ln x}$ .

2. Find the area of the region enclosed by the following curves:  $y = x^2$ ,  $y = x+6$ ,  $x = 0$  and  $x = 5$  . (3 marks)

\*\*\*\*\* **END OF PAPER** \*\*\*\*\*