1. Find

$$\int \left(3x + \frac{2}{x}\right)^2 \mathrm{d}x$$

giving the answer in simplest form.

(5)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 1 continued

(Total for Question 1 is 5 marks)

2. The line l_1 has equation $y = 10 - 3x$

The line l_2

- is perpendicular to l_1
- intersects l_1 at the point P with x coordinate 4

(a) Find an equation for l_2 writing the answer in the form $ax + by + c = 0$, where a, b and c are integers.

(3)

Given that

- line l_1 cuts the y-axis at the point M
- line l_2 cuts the y-axis at the point N

(b) find the area of triangle MPN, making your method clear.

(3)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA