Question 6 (25 marks)
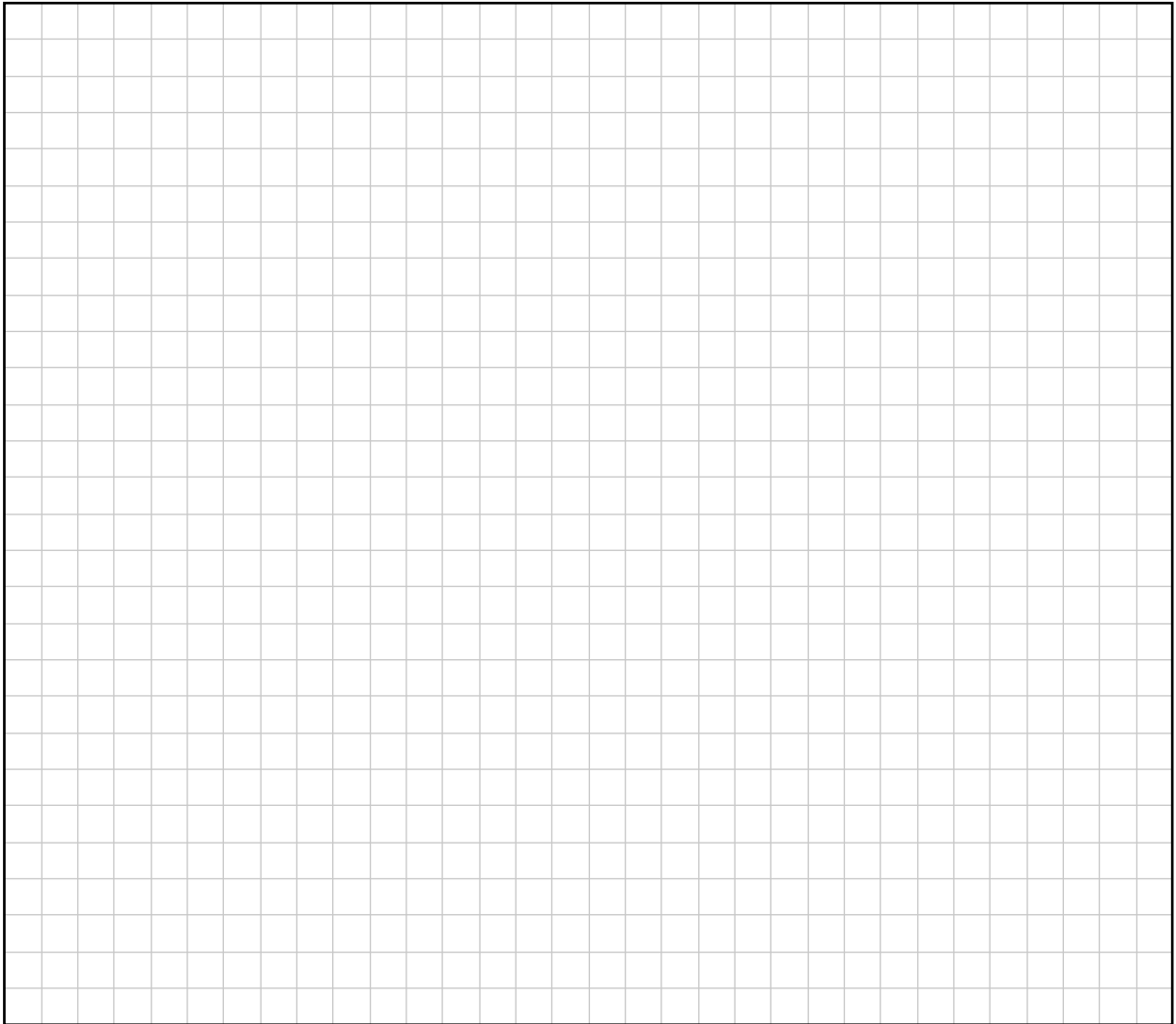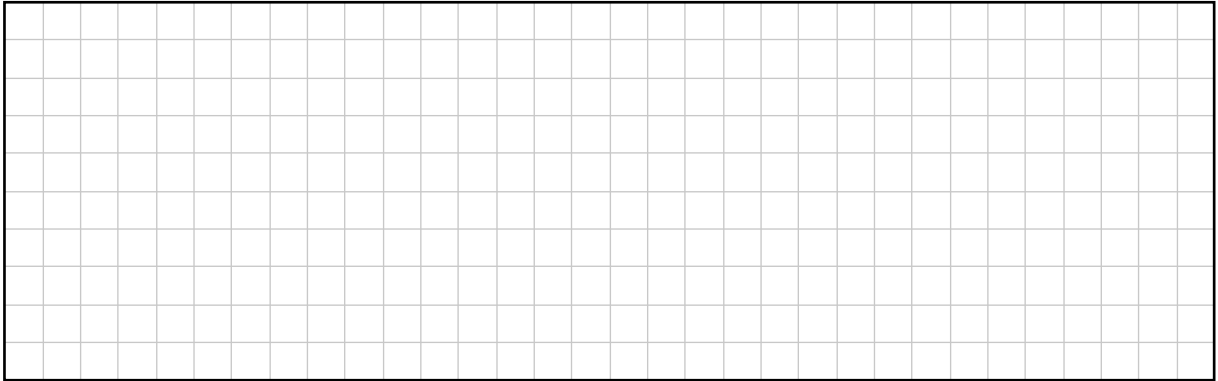
(a) Differentiate $(3x - 5)(2x + 4)$ with respect to x from first principles.

(b) **(i)** $h(x) = \frac{1}{2}\ln(2x + 3) + C$, where C is a constant.

Find $h'(x)$, the derivative of $h(x)$.

(ii) The diagram below shows part of the graph of the function $h'(x)$.
The shaded region in the diagram is between the graph and the x-axis,
from $x = 0$ to $x = A$.
This shaded region has an area of **ln3** square units. Find the value of A.

$A =$