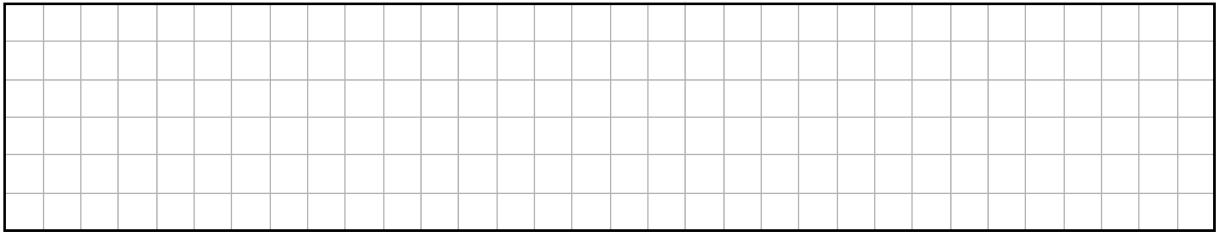


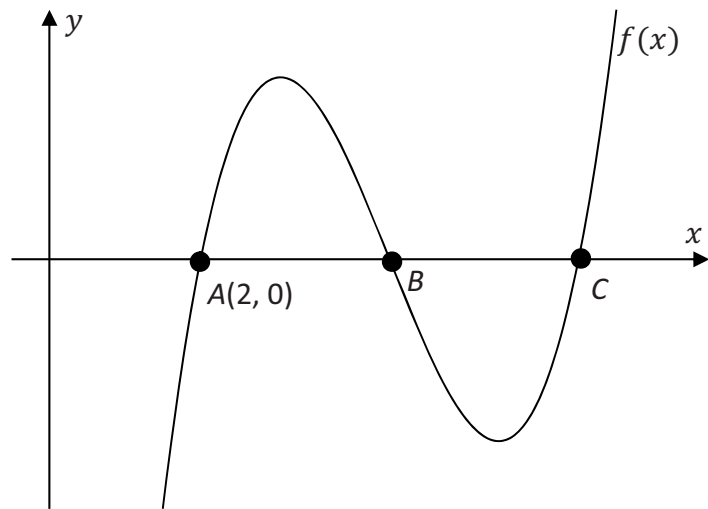
**Question 4**

**(25 marks)**

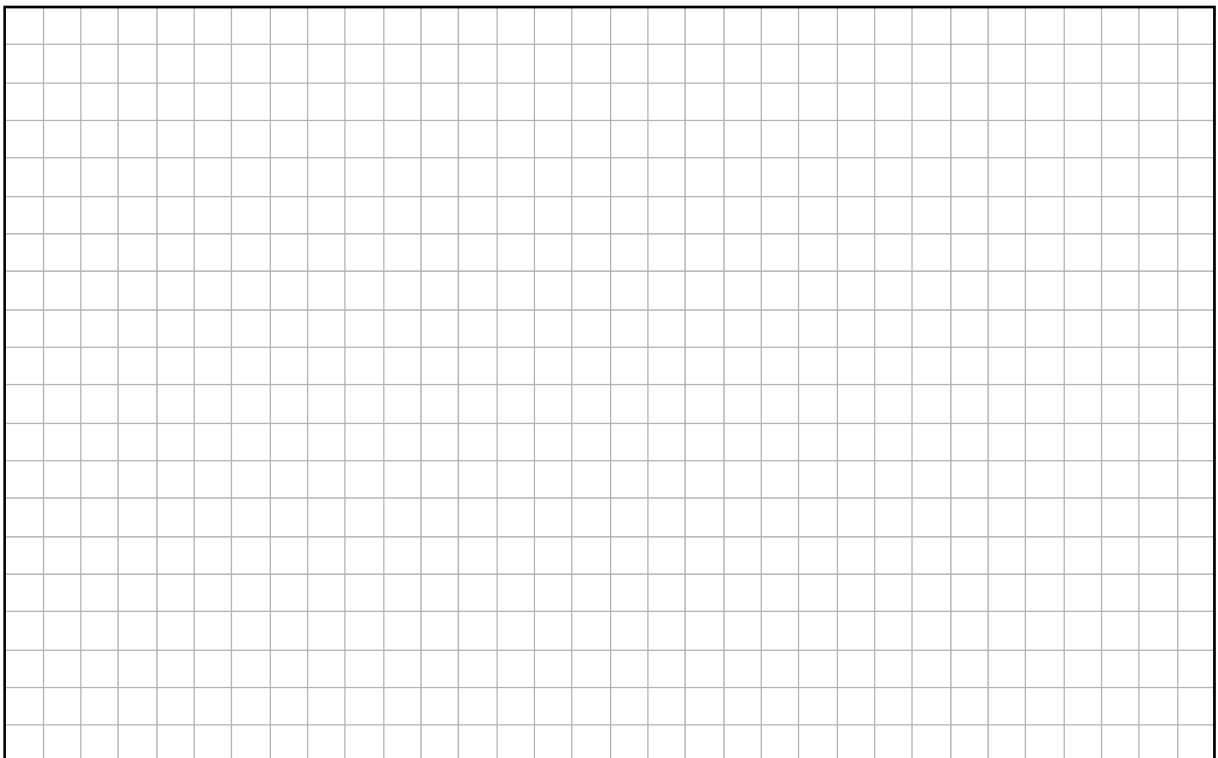
**(a)** Find  $\int(4x^3 - 6x + 10) dx$ .



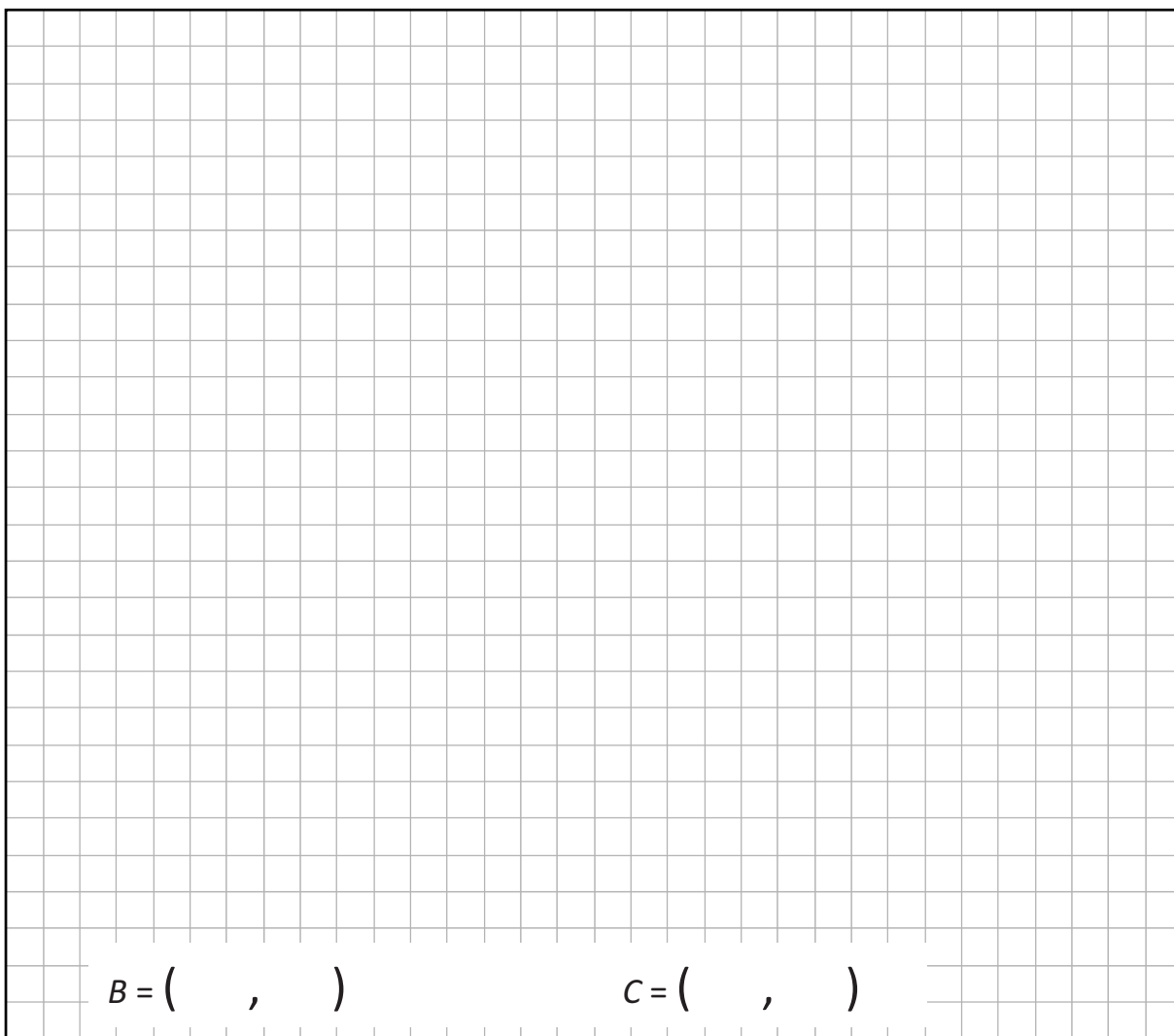
**(b)** Part of the graph of a cubic function  $f(x)$  is shown below (graph not to scale). The graph cuts the  $x$ -axis at the three points  $A(2, 0)$ ,  $B$ , and  $C$ .



**(i)** Given that  $f'(x) = 6x^2 - 54x + 109$ , show that  $f(x) = 2x^3 - 27x^2 + 109x - 126$ .



(ii) Find the co-ordinates of the point  $B$  and the point  $C$ .



$B = ( \quad , \quad )$                        $C = ( \quad , \quad )$