10 The equation of a curve C is $y = f(x)$ where $f'(x) = 3x^2 - 4x - p$ and $p \neq 0$

The points with coordinates $(2, 0)$ and $(-1, 9)$ lie on C.

(a) Show that C has equation $y = x^3 - 2x^2 - 4x + 8$

(6)

The straight line l has equation $y = 8 - 4x$

(b) Use algebraic integration to find the exact area of the finite region bounded by C and l.

(6)

Question 10 continued

Question 10 continued

Question 10 continued

(Total for Question 10 is 12 marks)