11 A curve **C** and a straight line **L** are drawn on a grid.

C has equation $y = 5x^2 - 16x - 5$

L has equation $y + 5x = 7$

(a) Find the coordinates of the points of intersection of **C** and **L**
Show clear algebraic working.

(5)

P is the point on the curve with equation $y = 5x^2 - 16x - 5$ with x coordinate 2

The line **Q** is the tangent to the curve at the point P

The line **Q** crosses the x-axis at the point X and the y-axis at the point Y
The point M lies on **Q** and is such that $XM = MY$

(b) Calculate the coordinates of the point M
Give your coordinates as exact values.

(5)

$$\left[\text{Solutions of } ax^2 + bx + c = 0 \text{ are } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right]$$

Question 11 continued

(Total for Question 11 is 10 marks)