

- 9 The straight line  $L_1$  passes through the point  $A$  with coordinates  $(4, 7)$  and has gradient  $m$ , where  $m < 0$

Another straight line  $L_2$  is perpendicular to  $L_1$  and passes through the point  $B$  with coordinates  $(4, k)$  where  $k \neq 7$

The lines  $L_1$  and  $L_2$  intersect at the point  $C$ .

Given that the  $y$  coordinate of  $C$  is  $Y$

(a) show that  $Y = \frac{7 + m^2k}{m^2 + 1}$  (7)

Given that the triangle  $ABC$  is isosceles,

(b) find the value of  $m$  (5)

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**Question 9 continued**

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**Question 9 continued**

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**(Total for Question 9 is 12 marks)**