

7 The point A has coordinates $(1, 7)$, and the point B has coordinates $(h, 10)$.

(a) You are given that the gradient of the line AB is 2.

Find the value of h .

[2]

(b) You are given that B is the midpoint of AC .

Find the coordinates of the point C .

[2]

(c) You are given that the straight line through the points A , B and C has two distinct points of intersection with the curve $y = x^2 - 4x + k$.

Determine the set of possible values of k .

[6]