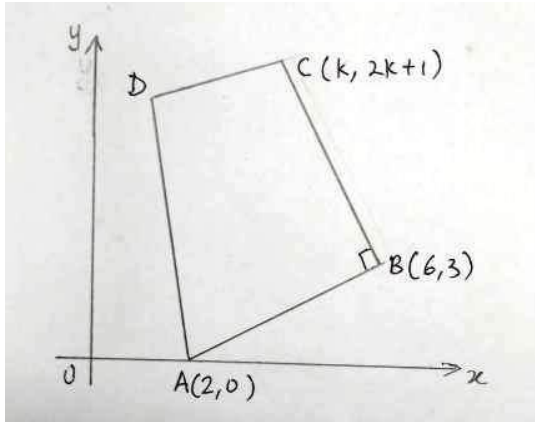Question :

(1) The diagram shows a quadrilateral $ABCD$ in which A is $(2, 0)$, B $(6, 3)$ and C $(k, 2k + 1)$. The equation of AD is $y = 16 - 8x$ and $\angle ABC = 90°$. Find

(i)   Gradient of BC

(ii)   Value of k

Given that M is the foot of the perpendicular bisector of AB from D, find

(iii) Coordinates of M

(iv)   Equation of DM

(v)   Coordinates of D

(vi)   Area of quadrilateral $ABCD$