1. Check, if the triangle ABC is a (a) right (b) isosceles (c) equilateral or (d) scalene:

(i) $A(-1,3)$, $B(4,5)$ and $C(6,0)$.

(ii) $A(2,-1)$, $B(5,2)$ and $C(2,5)$.

(iii) $A(1,1)$, $B(2,3)$ and $C(-1,4)$.

(iv) $A(-3,-2)$, $B(2,-1)$ and $C(3,-6)$.

2. Find the coordinates of the remaining vertex of parallelogram $ABCD$:

(i) $A(-2,-1)$, $B(4,0)$ and $D(1,3)$.

(ii) $A(-3,0)$, $B(1,1)$ and $C(4,3)$.

(iii) $A(-5,2)$, $C(3,10)$ and $D(-4,7)$.

(iv) $B(0,-2)$, $C(1,6)$ and $D(-5,3)$.

3. Consider points $A(-6,8)$ and $B(10,-12)$. Find the coordinates of point C on the line segment AB, such that:

(i) $|AC| : |CB| = 3 : 1$.

(ii) $|AC| : |CB| = 1 : 4$.

(iii) $|AC| : |CB| = 3 : 2$.

(iv) $|AC| : |CB| = 3 : 7$.

4. A circle has centre at $(2,4)$. Point $A(3,6)$ lies on the circle. Determine if the following points also lie on the circle: $B(1,6)$, $C(0,3)$, $D(4,5)$, $E(-1,3)$.

5. Consider a vector $\overrightarrow{v} = \begin{pmatrix} 12 \\ 5 \end{pmatrix}$.

(a) Find a vector of length 1, which has the same direction as $\overrightarrow{v}$.

(b) Determine which of the following vectors are parallel to $\overrightarrow{v}$: $\begin{pmatrix} 60 \\ 25 \end{pmatrix}, \begin{pmatrix} -24 \\ -10 \end{pmatrix}, \begin{pmatrix} 1.2 \\ 0.5 \end{pmatrix}, \begin{pmatrix} 48 \\ 15 \end{pmatrix}$.