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| **Vectors and Coordinates** |
| **(a)** | **(c)** | **(e)** |
| $ABCD$ is a parallelogram.$\vec{AB}=\left(\begin{matrix}-2\\3\end{matrix}\right)$ and $\vec{AD}=\left(\begin{matrix}3\\5\end{matrix}\right)$ Given that the coordinates of $A$ are $(3, 1)$, find the coordinates of points $B$, $C $and $D$. | $ABCD$ is a parallelogram. $\vec{BC}=\left(\begin{matrix}3\\2\end{matrix}\right)$The coordinates of $A$ are $(2, 7)$ and of $B$ are $(8, 3)$. Find the coordinates of $C$ and $D$, and the vector $\vec{DC}$. | $ABCD$ is a trapezium. $\vec{AB}=2\vec{DC}$. $\vec{DC}=\left(\begin{matrix}3\\1\end{matrix}\right)$ and $\vec{BC}=\left(\begin{matrix}-3\\4\end{matrix}\right)$The coordinates of $D$ are $(2, 8)$. Find the coordinates of $A$, and the vector $\vec{AD}$. |
|  **(b)** | **(d)** | **(f)** |
| $ABCD$ is a parallelogram.$\vec{AD}=\left(\begin{matrix}6\\1\end{matrix}\right)$ and $\vec{DC}=\left(\begin{matrix}2\\4\end{matrix}\right)$ Given that the coordinates of $A$ are $(0, 1)$, find the coordinates of points $B$, $C $and $D$. | $ABCD$ is a rhombus. $\vec{CB}=\left(\begin{matrix}-3\\-4\end{matrix}\right)$The coordinates of $A$ are $(-1, 4)$ and of $B$ are $(3, 1)$. Find the coordinates of $C$ and $D$, and the vector $\vec{DC}$. | $ABCDEF$ is a regular hexagon.$\vec{AB}=\left(\begin{matrix}4\\0\end{matrix}\right)$ and $\vec{FE}=\left(\begin{matrix}2\\2\sqrt{3}\end{matrix}\right)$ $\vec{FC}=2\vec{AB}$. The coordinates of $A$ are $(5, 2)$. Find the coordinates of $B$, $C$ and $D$. |