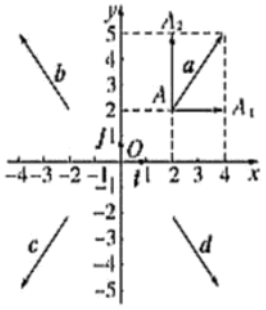
Standard Basis Vectors

Express the vector using the standard basis vectors $\hat{\imath}$ and $\hat{\jmath}$



$\vec{a} = 2\hat{\imath} + 3\hat{\jmath}$
$\vec{b} = -2\hat{\imath} + 3\hat{\jmath}$
$\vec{c} = -2\hat{\imath} - 3\hat{\jmath}$
$\vec{d} = 2\hat{\imath} - 3\hat{\jmath}$

Question on Instagram

Why: Want to express the vectors in terms of the standard basis vectors

Steps:

1. Write out standard basis vectors.
2. Write out vector from the points.
3. Express vector in terms of standard basis vectors.

(1) The standard basis vectors are directed along the axis and have a magnitude of 1.

$\hat{\imath} = (1,0) \quad \hat{\jmath} = (0,1)$

(2) Vector A starts from a point (2,2) and ends at point (4,5). Thus,
$\vec{a} = (4 - 2,5 - 2) = (2,3)$

(3) We can express vector $\vec{a}$ in terms of the standard basis vectors.
$\vec{a} = 2\hat{\imath} + 3\hat{\jmath}$