

Example #2 p. 6 Ch. 9

Is the following pair of vectors
orthogonal?

$$-4i + 3j \text{ \& } 8i - 6j$$

Understand the component form

- “Pluck off” the a & b components from i & j

so, $-4i + 3j = \langle -4, 3 \rangle$

&

also, $8i - 6j = \langle 8, -6 \rangle$

Find the dot product of u & v

- Multiply the **vertical** components of u & v

$$u_a \cdot v_a = -4 \cdot 8 = -32$$

- Multiply the **horizontal** components of u & v

$$u_b \cdot v_b = 3 \cdot -6 = -18$$

- The dot product is a **scalar**. Sum vertical & horizontal component products

$$u \cdot v = -32 + -18 = -50$$

The Dot Product $\neq 0$

Since the dot product is not zero, this means that the vectors are not orthogonal to one another.

Not Orthogonal means not at right angles.