

Watch. Practice. Understand. | Lesson 200

The Secret of Vectors in Pre-Calculus, Calculus and Multi-Variable Calculus

Watch the matching video: <https://www.youtube.com/watch?v=6qAmv60pQQE>

Practice focus: Vectors and dot products

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 For $u = (2, -1)$ and $v = (3, 4)$, find $2u - v$.

02 Find the magnitude and a unit vector in the direction of $(3, 4)$.

03 Find the dot product of $(2, -1)$ and $(3, 4)$.

04 Are $(1, 2)$ and $(4, -2)$ perpendicular? Explain.

Worked answers | Lesson 200

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01 For $u = (2, -1)$ and $v = (3, 4)$, find $2u - v$.

$$(4, -2) - (3, 4) = (1, -6).$$

02 Find the magnitude and a unit vector in the direction of $(3, 4)$.

Magnitude 5; unit vector $(3/5, 4/5)$.

03 Find the dot product of $(2, -1)$ and $(3, 4)$.

$$2(3) + (-1)(4) = 2.$$

04 Are $(1, 2)$ and $(4, -2)$ perpendicular? Explain.

Dot product = $4 - 4 = 0$. Both are nonzero, so they are perpendicular.