

The Heart and Soul of Basic Vectors Pre Calculus Honors Vector 8 4

Lesson 241 | Precalculus | Vectors and dot products

<https://www.youtube.com/watch?v=zi1KmjrUQfM>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01 For $u = \langle 14, 10 \rangle$ and $v = \langle 8, -2 \rangle$, find $u+v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

02 For $u = \langle 10, 6 \rangle$ and $v = \langle 14, -2 \rangle$, find $u+v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

03 For $u = \langle 7, 9 \rangle$ and $v = \langle 4, -2 \rangle$, find $u+v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

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Name: _____ Date: _____ Show your reasoning.

04 For $u = \langle 2, 3 \rangle$ and $v = \langle 7, -2 \rangle$, find $u + v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

05 For $u = \langle 10, 7 \rangle$ and $v = \langle 5, -4 \rangle$, find $u + v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

06 For $u = \langle 4, 2 \rangle$ and $v = \langle 12, -3 \rangle$, find $u + v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

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01 For $u = \langle 14, 10 \rangle$ and $v = \langle 8, -2 \rangle$, find $u+v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

$u+v = \langle 22, 8 \rangle$. $u \cdot v = 112 - 20 = 92$. $|u| = \sqrt{296}$. Nonzero dot product: not perpendicular.

02 For $u = \langle 10, 6 \rangle$ and $v = \langle 14, -2 \rangle$, find $u+v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

$u+v = \langle 24, 4 \rangle$. $u \cdot v = 140 - 12 = 128$. $|u| = \sqrt{136}$. Nonzero dot product: not perpendicular.

03 For $u = \langle 7, 9 \rangle$ and $v = \langle 4, -2 \rangle$, find $u+v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

$u+v = \langle 11, 7 \rangle$. $u \cdot v = 28 - 18 = 10$. $|u| = \sqrt{130}$. Nonzero dot product: not perpendicular.

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04

For $u = \langle 2, 3 \rangle$ and $v = \langle 7, -2 \rangle$, find $u + v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

$u + v = \langle 9, 1 \rangle$. $u \cdot v = 14 - 6 = 8$. $|u| = \sqrt{13}$. Nonzero dot product: not perpendicular.

05

For $u = \langle 10, 7 \rangle$ and $v = \langle 5, -4 \rangle$, find $u + v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

$u + v = \langle 15, 3 \rangle$. $u \cdot v = 50 - 28 = 22$. $|u| = \sqrt{149}$. Nonzero dot product: not perpendicular.

06

For $u = \langle 4, 2 \rangle$ and $v = \langle 12, -3 \rangle$, find $u + v$, $u \cdot v$, $|u|$, and decide whether they are perpendicular.

$u + v = \langle 16, -1 \rangle$. $u \cdot v = 48 - 6 = 42$. $|u| = \sqrt{20}$. Nonzero dot product: not perpendicular.