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sandipan_dey >

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☆ Course / Unit 2: Geometry of Derivati... / Lecture 5: Finding vectors normal to level cur...



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Previous

44:10:48





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Lecture due Aug 18, 2021 20:30 IST Completed



Practice

Hidden dot products 1

1.0/1 point (graded)

Find a vector $\langle a,b \rangle$ that is perpendicular to the line y=3x.

(Enter the vector in the form [a,b]. That is surround your vector by square brackets, and separate entries by a comma. Note that the entries of your vector must be numbers.)

Solution:

The equation y = 3x can be written as a hidden dot product:

$$\langle 3,-1 \rangle \cdot \langle x,y \rangle = 0.$$

Therefore, the vector $\langle 3, -1 \rangle$ is perpendicular to every point on the line y = 3x. Any scalar multiple of this vector is also correct!

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You have used 2 of 4 attempts

• Answers are displayed within the problem

Hidden dot products 2

1/1 point (graded)

Find the equation for the line through the origin that is perpendicular to the vector $\langle -1, 4 \rangle$.

(Enter the equation in the form ax + by = 0. Note that the 0 = is provided for you, so you only enter an expression of the form a*y+b*x)

Solution:

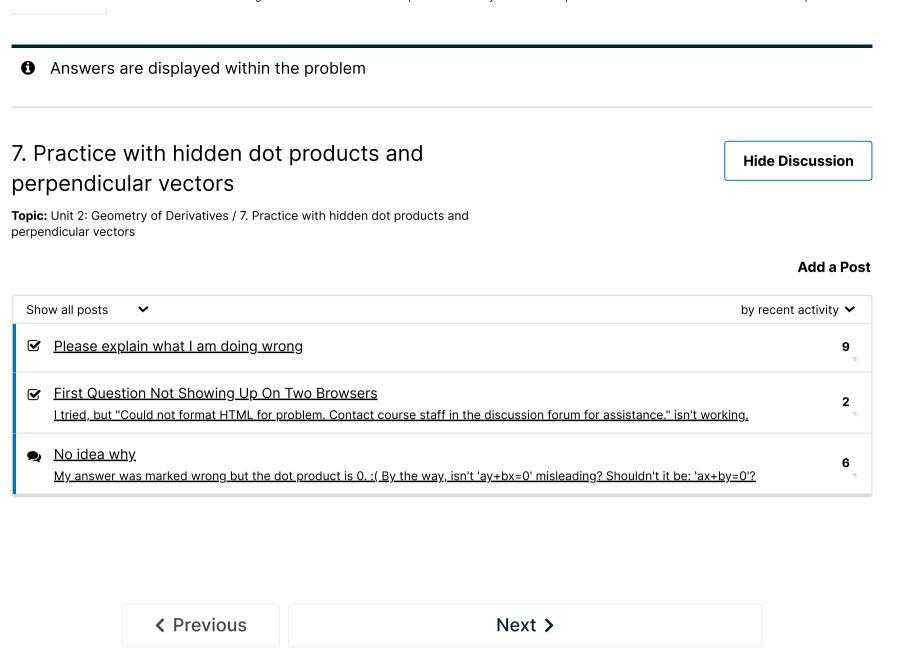
The line perpendicular to the vector $\langle -1,4 \rangle$ satisfies the dot product equation

$$\langle -1,4
angle \cdot \langle x,y
angle =0$$

Expanding this dot product, we obtain the equation for the line perpendicular to the given vector:

$$\langle -1,4
angle \cdot \langle x,y
angle = -x+4y=0.$$





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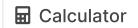
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