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5(a)

1.0/1 point (ungraded)

Let \vec{v} be the vector $(3, 4)$ and \vec{w} be the vector $(2, -1)$. Let θ be the angle between \vec{v} and \vec{w} . Find $\cos \theta$.

2/(5*sqrt(5))

✔ Answer: 2/(5*sqrt(5))

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Solution:

We know that

$$\vec{v} \cdot \vec{w} = |\vec{v}||\vec{w}| \cos \theta = (3, 4) \cdot (2, -1) = 6 - 4 = 2$$

We compute the magnitude of each vector and find:

$$|(3, 4)| = 5 \quad |(2, -1)| = \sqrt{5} \tag{7.1}$$

Therefore

$$\cos(\theta) = \frac{2}{5\sqrt{5}}$$

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5(b)

1/1 point (ungraded)

As above, let \vec{v} be the vector $(3, 4)$ and \vec{w} be the vector $(2, -1)$. Let θ be the angle between \vec{v} and \vec{w} .

The angle θ is

☒ acute

☐ right

☐ obtuse



Solution:

Since $\vec{v} \cdot \vec{w} = (3, 4) \cdot (2, -1) = 6 - 4 = 2 > 0$, we know that $\cos \theta > 0$. Therefore θ must be **acute**.

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