The Scalar Product: Solutions

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Answers to questions relating to the guide on the Scalar Product.

*These are the answers to* [*The Scalar Product: Questions*](qs-scalar_product.qmd)*.* **Please attempt the questions before reading these answers!**

## Answers

### Q1

Find the scalar product of **u** and **v**.

1.1. For **u** and **v** , the scalar product is 26.

1.2. For **u** and **v** , the scalar product is 117.

1.3. For **u** and **v** , the scalar product is -22.37.

1.4. For **u** and **v** , the scalar product is -362.

1.5. For **u** and **v** , the scalar product is 48.

1.6. For **u** and **v** , the scalar product is -195.

1.7. For **u** and **v** , the scalar product is -575.

1.8. For **u** and **v** , the scalar product is 0.

As the scalar product of **u** and **v** is 0, they are perpendicular to each other. This is true for any combination of , , and .

### Q2

Find the value(s) of for which **u** and **v** are perpendicular.

2.1. For **u** and **v** , = 3.

2.2. For **u** and **v** , = -.

2.3. For **u** and **v** , = -3.

2.4. For **u** and **v** , = -2 or = -4.

2.5. For **u** and **v** , = or = -1.

2.6. For **u** and **v** , = or = -2.

2.7. For **u** and **v** , = or = .

2.8. For **u** and **v** , = 7 or = -.

## Q3

Find the angle in between **u** and **v** .

3.1. For **u** and **v** , = 132.2°.

3.2. For **u** and **v** , = 70.5°.

3.3. For **u** and **v** , = 108.7°.

3.4. For **u** and **v** , = 86.2°.

3.5. For **u** and **v** , = 95.1°.

3.6. For **u** and **v** , = 90.0°.

3.7. For **u** and **v** , = 43.0°.

3.8. For **u** and **v** , = 137.8°.