Questions: Introduction to vectors

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Summary

A selection of questions for the study guide on introduction to vectors.

*Before attempting these questions, it is recommended that you read* [*Guide: Introduction to vectors*](../studyguides/introductiontovectors.qmd)*.*

## Q1

Find the magnitude of the following vectors.

1.1. $ a=−i+3j$

1.2. $ b=2i+4j+6k$

1.3. $ c=i−j+4k$

1.4. $ d=5i−2j+k$

1.5. $ e=\left(\begin{matrix}2\\−1\\4\end{matrix}\right)$

1.6. $ f=\left(\begin{matrix}−3\\6\\2\end{matrix}\right)$

1.7. $ g=\left(\begin{matrix}5\\1\\\sqrt{2}\end{matrix}\right)$

1.8. $ h=6i+2j+2k$

1.9. $ m=−3i+3j−3k$

1.10. $ n=2i+4j+4k$

1.11. $ p=8i−2j+16k$

1.12. $ q=\left(\begin{matrix}5\\−2\\14\end{matrix}\right)$

1.13. $ u=\left(\begin{matrix}7\\2\\−1\end{matrix}\right)$

1.14. $ v=\left(\begin{matrix}12\\9\\8\end{matrix}\right)$

## Q2

Find the unit vectors in the directions of the following vectors.

2.1. $ a=−2i+3j$

2.2. $ b=−2i+4j−6k$

2.3. $ c=i+2j+4k$

2.4. $ d=4i−2j+3k$

2.5. $ e=\left(\begin{matrix}3\\0\\2\end{matrix}\right)$

2.6. $ f=\left(\begin{matrix}−3\\1\\7\end{matrix}\right)$

2.7. $ g=\left(\begin{matrix}−5\\0\\\sqrt{2}\end{matrix}\right)$

2.8. $ h=−3i+1j+1k$

2.9. $ m=−3i+3j−3k$

2.10. $ n=3i+6j+9k$

2.11. $ p=3i−4j−5k$

2.12. $ q=\left(\begin{matrix}4\\−3\\12\end{matrix}\right)$

2.13. $ u=\left(\begin{matrix}6\\5\\4\end{matrix}\right)$

2.14. $ v=\left(\begin{matrix}2\\4\\8\end{matrix}\right)$

[After attempting the questions above, please click this link to find the answers.](../answers/as-introductiontovectors.qmd)

## Version history and licensing

v1.0: initial version created 08/23 by Zheng Chen as part of a University of St Andrews STEP project.

* v1.1: edited 05/24 by tdhc.

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