Scalar Resolutes

Each of the questions included here can be solved using either the TI-nspire CX or TI-nspire CX CAS.

Scan the QR code or use the link: http://bit.ly/ScalarResolutes

Question: 1.

Given $v = 3i + 4j$ and $w = 12i - 5j$, determine the scalar resolute of v in the direction of w

Question: 2.

Given $v = 3i + 4j - 12k$ and $w = i + 3j + k$, determine the scalar resolute of w in the direction of v.

Question: 3.

Given the scalar resolute of $m = 4i + bj + 12k$ in the direction of $n = 3i + j + k$ is equal to $\sqrt{11}$, determine the value of b.

Question: 4.

The scalar resolute of $v = 3i + bj + 4k$ in the direction of $w = 3i + 3j + 3k$ is equal to zero (0).

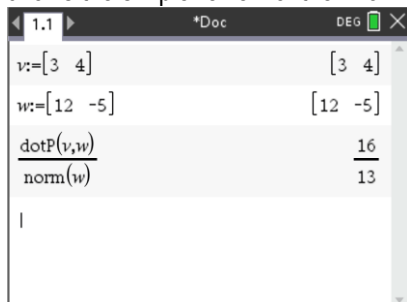Determine the value of b and explain how this is possible.

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Answers

Question 1

The calculations can be done by hand, but the use of the calculator reduces the likelihood of simple arithmetic errors and allows the simple review of the information through the history.
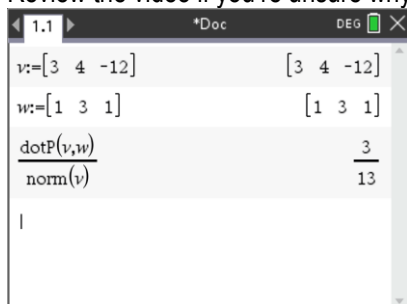

Both the CAS and non-CAS versions can use the same process as the vectors do not contain variables.

Question 2

Watch out for the order in this question, it is the reverse of the previous question.
Review the video if you're unsure why this makes a difference.

Both the CAS and non-CAS versions can use the same process as the vectors do not contain variables.

Question 3

The non-CAS version of TI-nspire cannot perform algebraic expressions so the vector cannot be defined to include a variable, however if it is defined as a function then it can naturally contain a variable.
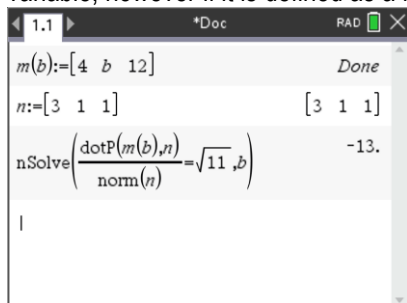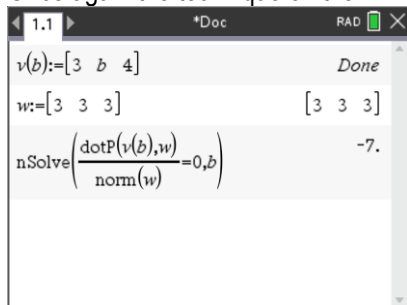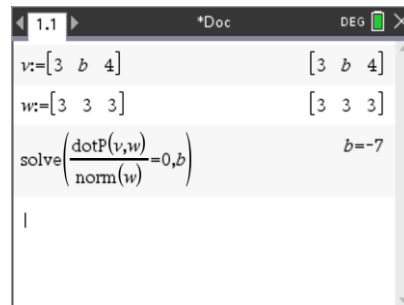

TI-nspire CX non-CAS
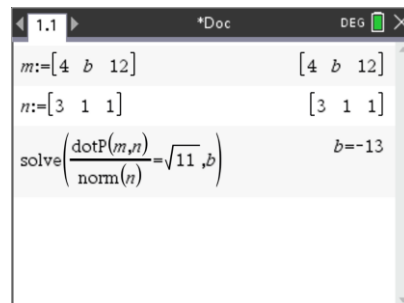
TI-nspire CX CAS

Question 4

The only way the scalar resolute of two non-zero vectors can equal zero is if the vectors are perpendicular.
Once again the technique on the TI-nspire CX non-CAS is slightly different.

TI-nspire CX non-CAS

TI-nspire CX CAS

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TEXAS INSTRUMENTS