# Angles between vectors using a non-standard inner product

Quiz, 5 questions

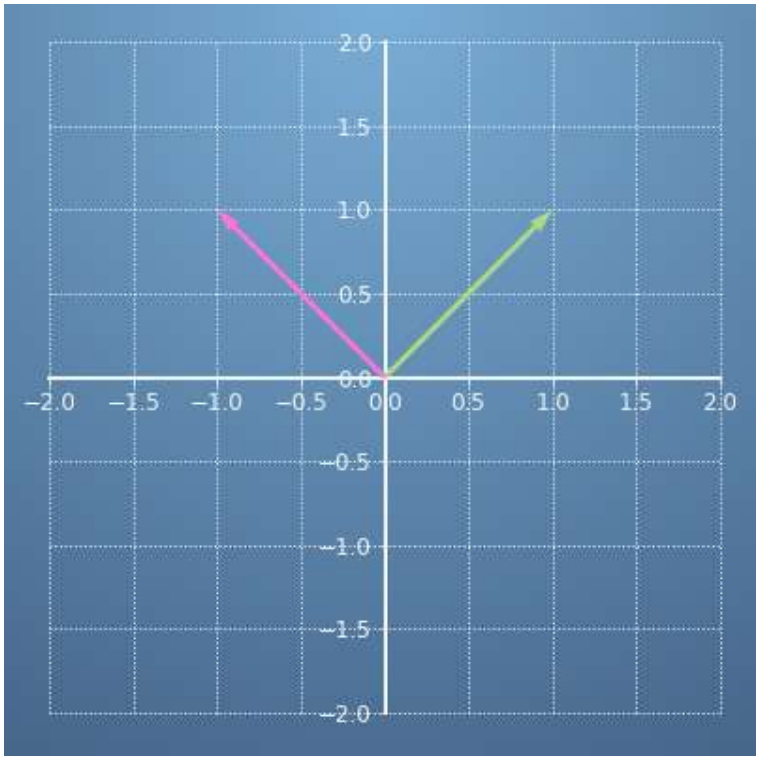
**5/5 points (100%)**

## Congratulations! You passed!

Next Item

1 / 1 point

1.




Compute the angle between $\mathbf{x} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} -1 \\ 1 \end{bmatrix}$ using the inner product defined by

$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 2 & -1 \\ -1 & 4 \end{bmatrix} \mathbf{y}$$

- 1.2 rad ($69^\circ$)

**Correct**

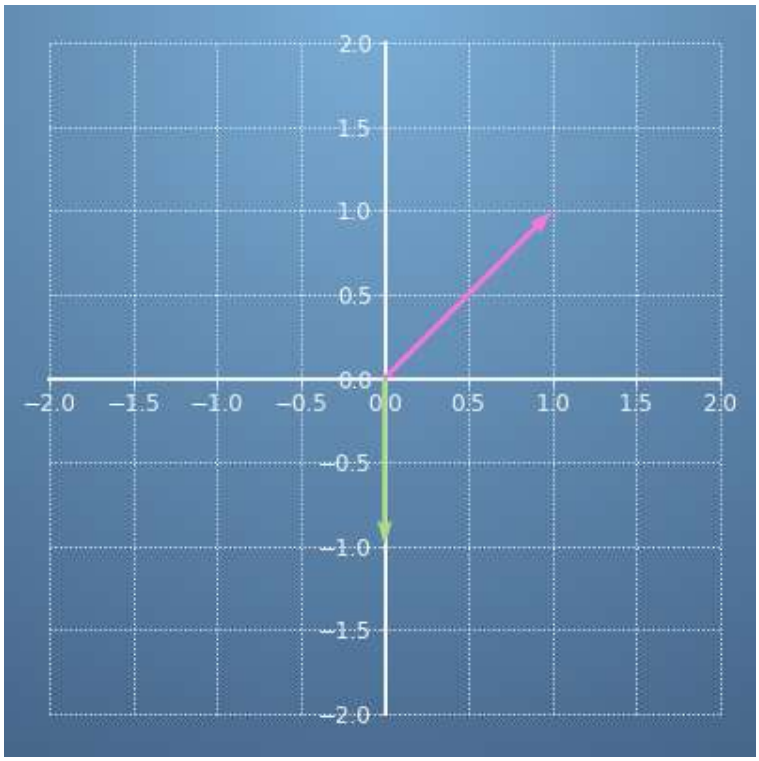
Absolutely right!

0.35 rad ($20°$)

1.57 rad ($90°$)

1 / 1 point

2.




Compute the angle between $\mathbf{x} = \begin{bmatrix} 0 \\ -1 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ using the inner product defined by

$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 1 & -\frac{1}{2} \\ -\frac{1}{2} & 5 \end{bmatrix} \mathbf{y}$$

2.69 rad ($154°$)

**Correct**
Well done!

2.35 rad ($135°$)

-0.9 rad ($-52°$)

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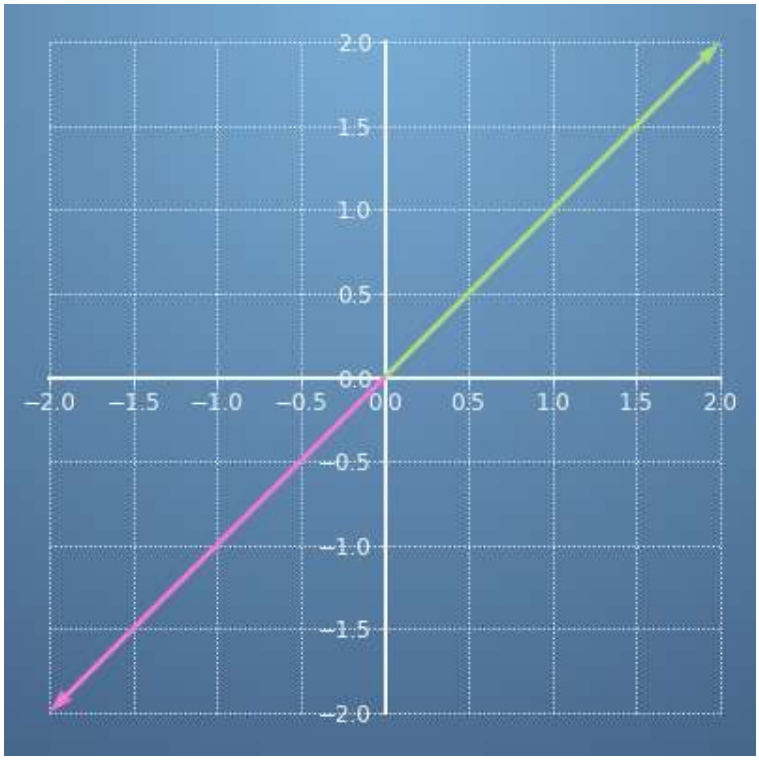
1 / 1 point

3.




Compute the angle between $\mathbf{x} = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} -2 \\ -2 \end{bmatrix}$ using the inner product defined by

$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 2 & 1 \\ 1 & 4 \end{bmatrix} \mathbf{y}$$

- 0 rad ($0^\circ$)
- 3.14 rad ($180^\circ$)

**Correct**

Well done: $\pi \approx 3.14$ is the right answer.

1 / 1 point

4.

# Angles between vectors using a non-standard inner product

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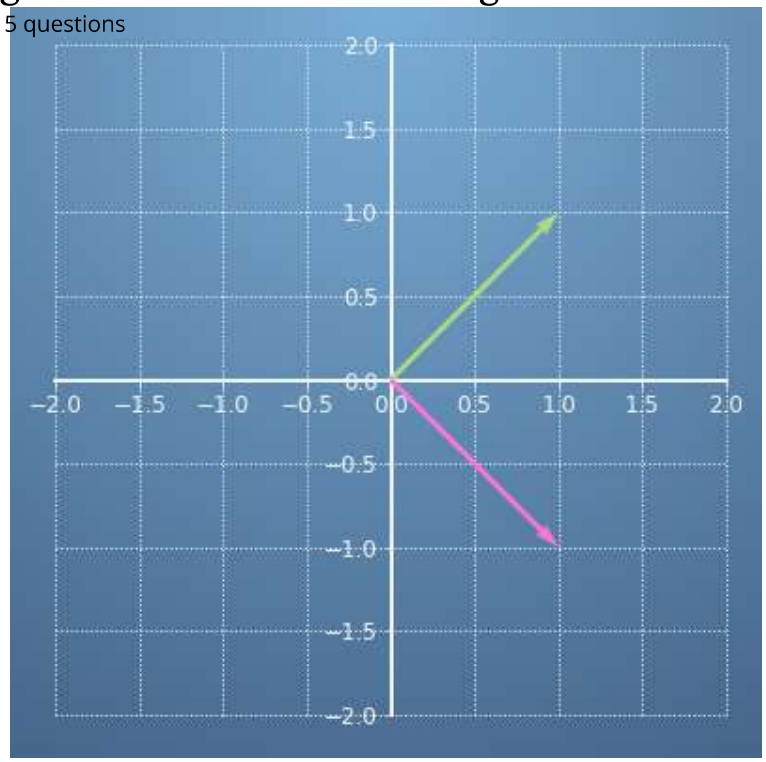


Compute the angle between $\mathbf{x} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$ using the inner product defined by

$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 1 & 0 \\ 0 & 5 \end{bmatrix} \mathbf{y}$$

- 1.57 rad ($90^\circ$)
- -2.3 rad ($-131^\circ$)
- -1.57 rad ($-90^\circ$)
- 2.3 rad ($131^\circ$)

**Correct**

Good job.

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1 / 1 point

5.

# Angles between vectors using a non-standard inner product

Quiz, 5 questions

**5/5 points (100%)**

Compute the angle between $\mathbf{x} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 2 \\ -1 \\ 0 \end{bmatrix}$ using the inner product defined by

$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix} \mathbf{y}$$

- [x] 1.37 rad ($78^\circ$)

**Correct**
Well done!

- [ ] 1.31 rad ($75^\circ$)
- [ ] 0.2 rad ($11^\circ$)