✓ **Congratulations! You passed!**

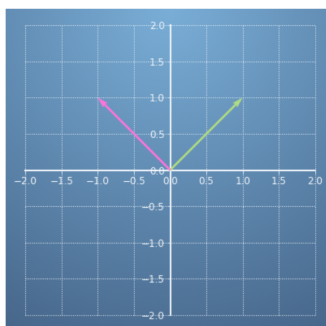| Grade	Latest Submission	To pass 80% or	
received 100%	Grade 100%	higher	**Go to next item**

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1.   **1 / 1 point**

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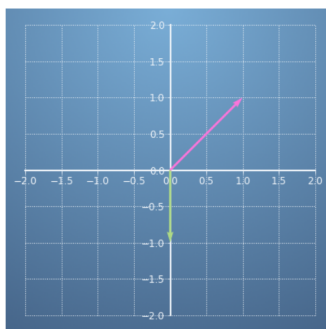
$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 2 & -1 \\ -1 & 4 \end{bmatrix} \mathbf{y}$$

⦿ 1.2 rad $(69°)$

○ 1.57 rad $(90°)$

○ 0.35 rad $(20°)$

✓ **Correct**
Absolutely right!

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2.   **1 / 1 point**

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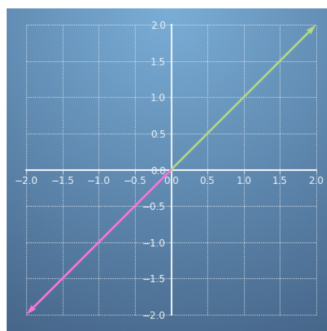
$$\langle \mathbf{x}, \mathbf{y} \rangle = \mathbf{x}^T \begin{bmatrix} 1 & -\frac{1}{2} \\ -\frac{1}{2} & 5 \end{bmatrix} \mathbf{y}.$$

○ 2.35 rad $(135°)$

⦿ 2.69 rad $(154°)$

○ -0.9 rad $(-52°)$

✓ **Correct**
Well done!

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

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

Using this inner product, are the vectors...
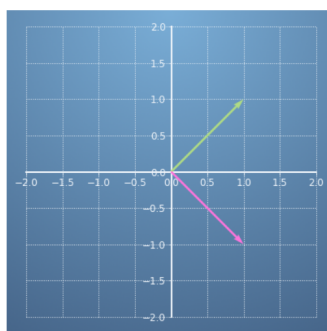
○ Parallel

◉ Antiparallel

✓ **Correct**
    Well done! The angle between the vectors is $\pi \approx 3.14$.

4.

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 $(-90°)$
◉ 2.3 rad $(131°)$
○ 1.57 rad $(90°)$
○ -2.3 rad $(-131°)$

✓ **Correct**
    Good job.

5.

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

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

⦿ 1.37 rad $(78°)$

◯ 1.31 rad $(75°)$

◯ 0.2 rad $(11°)$

⊘ **Correct**

Well done!