

Precalculus

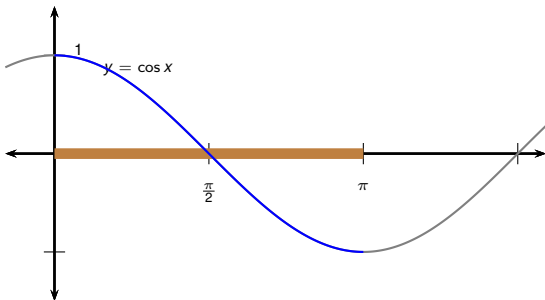
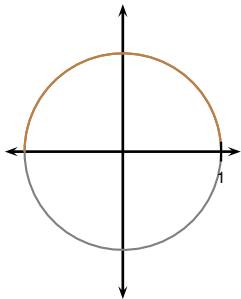
Simplify $\arccos(\cos(x))$

Todor Milev

2019

Example

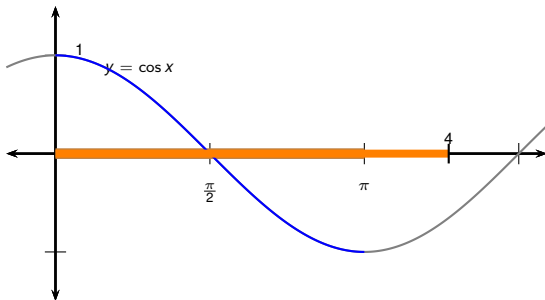
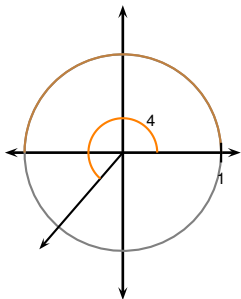
Find $\arccos(\cos 4)$.



Example

Find $\arccos(\cos 4)$.

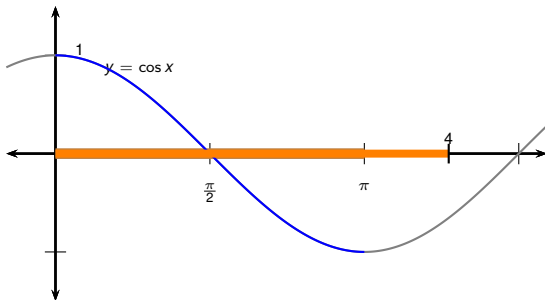
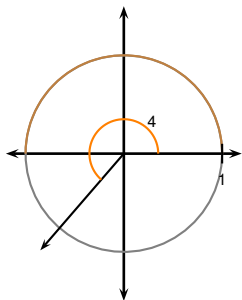
- 4 is not between 0 and π .



Example

Find $\arccos(\cos 4)$.

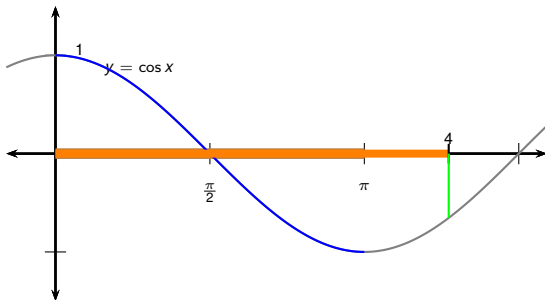
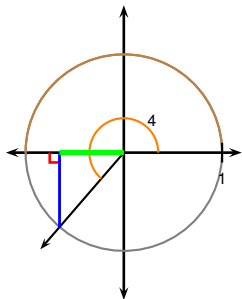
- 4 is not between 0 and π .
- We need the angle a between 0 and π for which $\cos 4 = \cos a$.



Example

Find $\arccos(\cos 4)$.

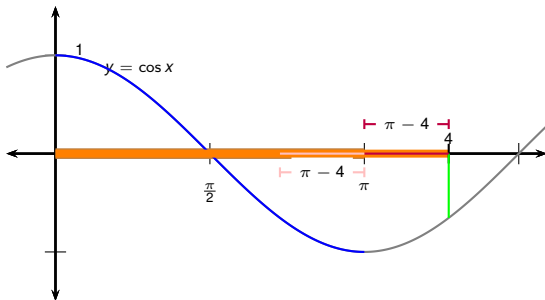
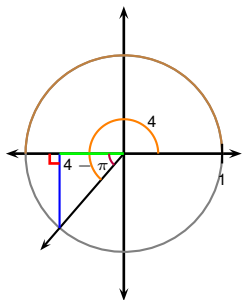
- 4 is not between 0 and π .
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Example

Find $\arccos(\cos 4)$.

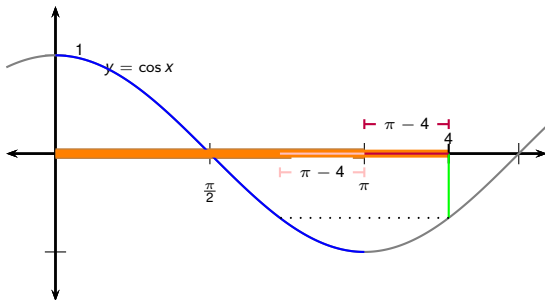
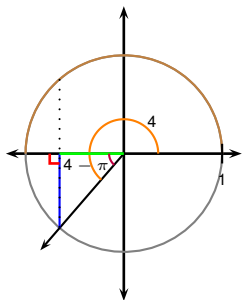
- 4 is not between 0 and π .
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Example

Find $\arccos(\cos 4)$.

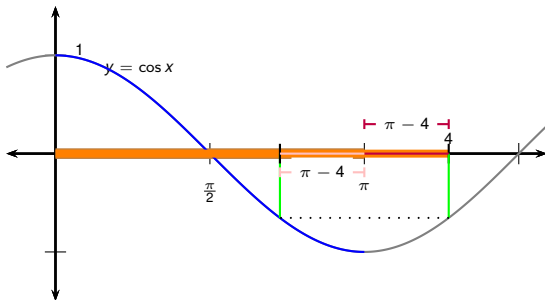
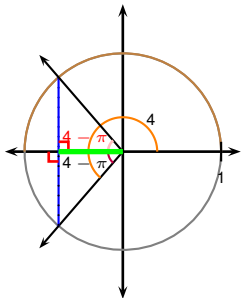
- 4 is not between 0 and π .
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Example

Find $\arccos(\cos 4)$.

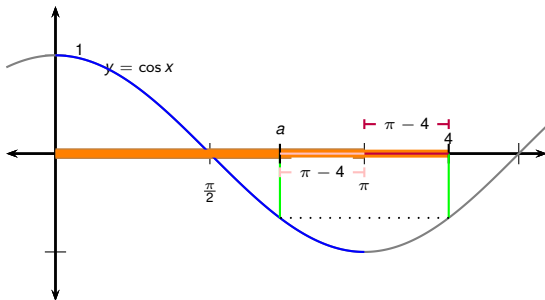
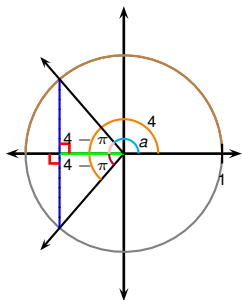
- 4 is not between 0 and π .
- We need the angle a between 0 and π for which $\cos 4 = \cos a$.



Example

Find $\arccos(\cos 4)$.

- 4 is not between 0 and π .
- We need the angle **a between 0 and π** for which $\cos 4 = \cos a$.

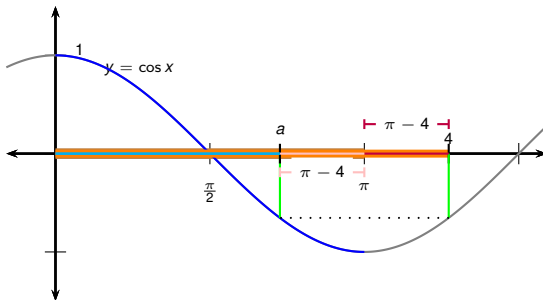
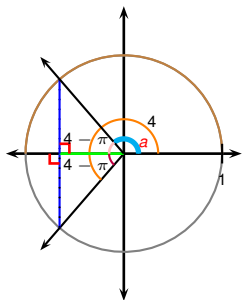


Example

Find $\arccos(\cos 4)$.

- 4 is not between 0 and π .
- We need the angle a between 0 and π for which $\cos 4 = \cos a$.

$$a = ?$$

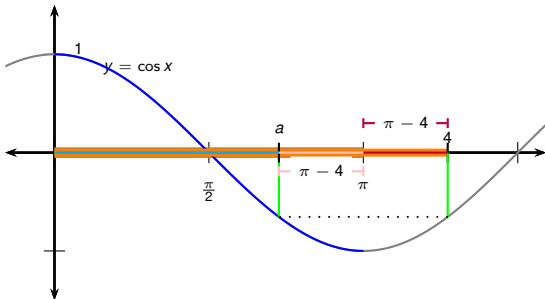
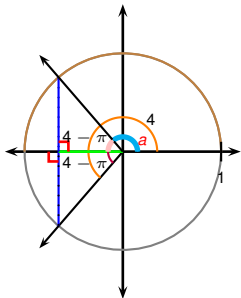


Example

Find $\arccos(\cos 4)$.

- 4 is not between 0 and π .
- We need the angle a between 0 and π for which $\cos 4 = \cos a$.

$$a = \pi - (4 - \pi)$$

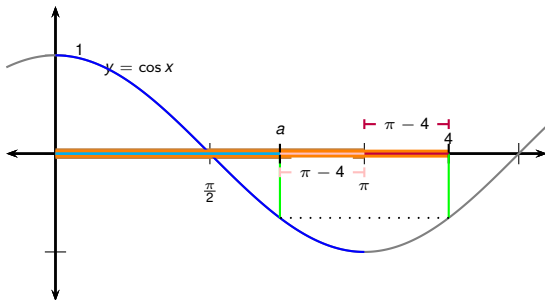
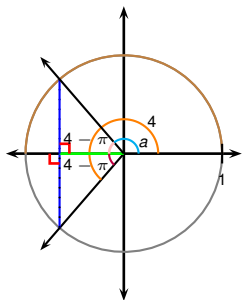


Example

Find $\arccos(\cos 4)$.

- 4 is not between 0 and π .
- We need the angle a between 0 and π for which $\cos 4 = \cos a$.

$$a = \pi - (4 - \pi) = 2\pi - 4$$



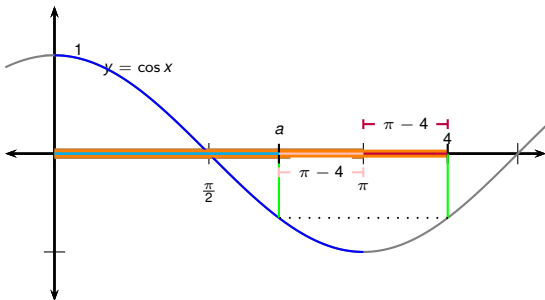
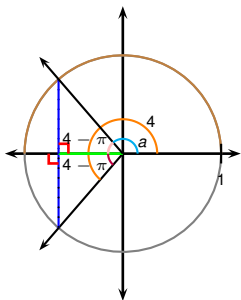
Example

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- 4 is not between 0 and π .
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$$\text{Therefore } \arccos(\cos 4) = a$$



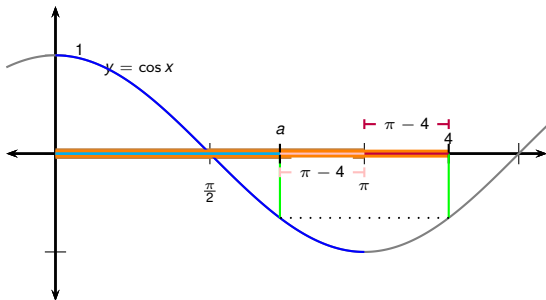
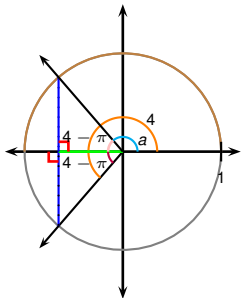
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$$\begin{aligned} \text{Therefore } \arccos(\cos 4) &= \arccos(\cos a) \\ &= a \end{aligned}$$



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$$\begin{aligned} \text{Therefore } \arccos(\cos 4) &= \arccos(\cos a) \\ &= a = 2\pi - 4. \end{aligned}$$

