Precalculus
Trigonometric functions computable with algebraic numbers using special angles

Todor Milev

2019

Example

Find the exact value of the trigonometric function using radicals.

$\cos(105^\circ)$

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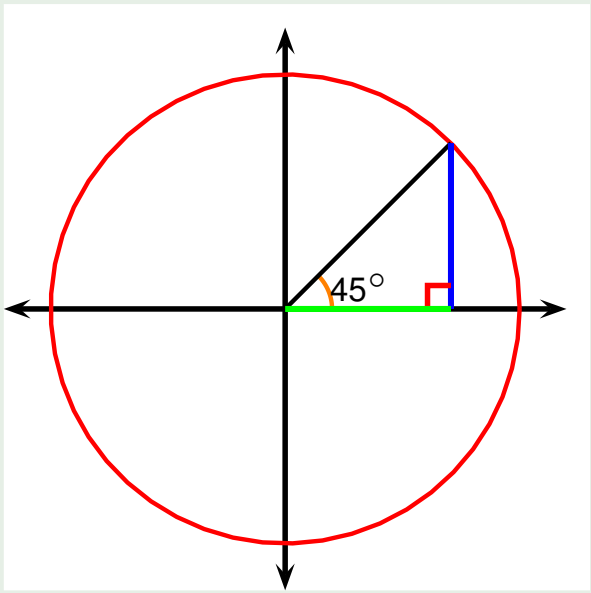
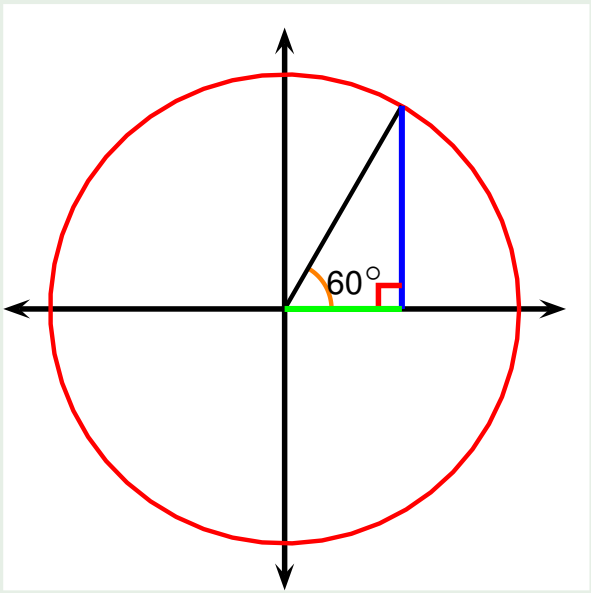
we know the trig f-ns of 45° and 60°





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$= ?$

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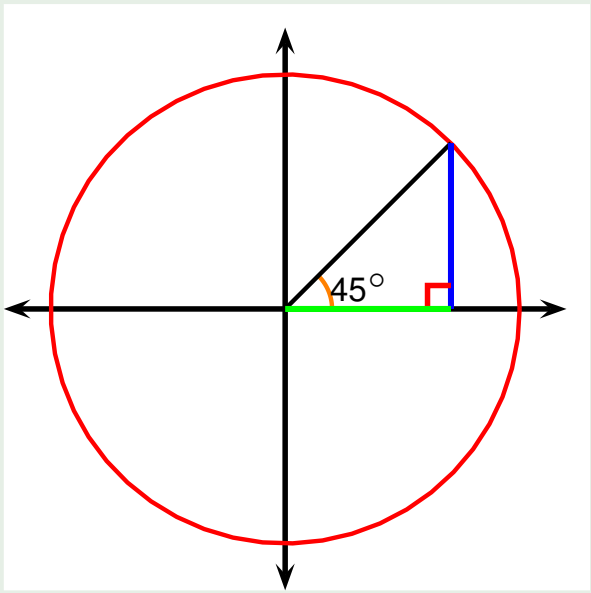
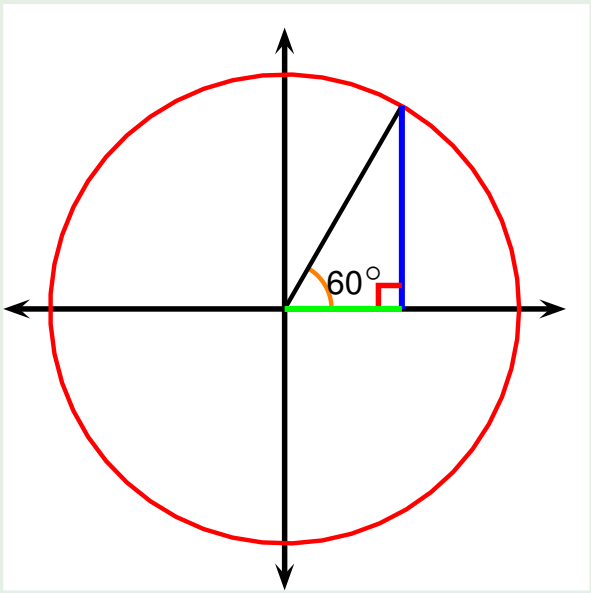
Angle sum f-la





Example

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$$\cos(105^\circ) = \cos(45^\circ + 60^\circ)$$

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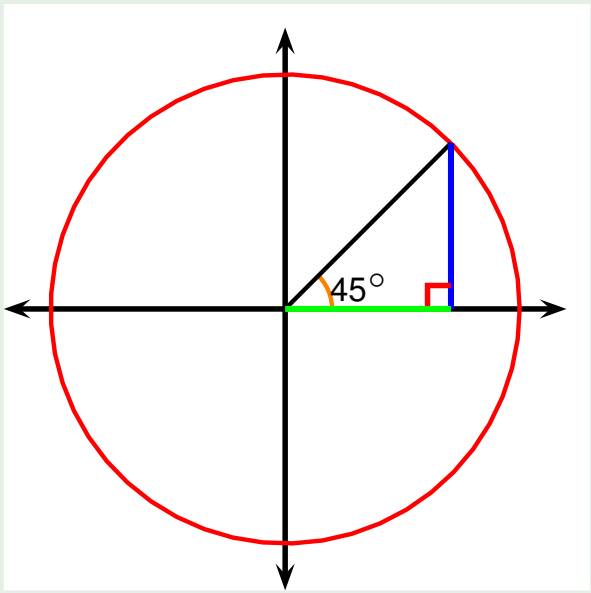
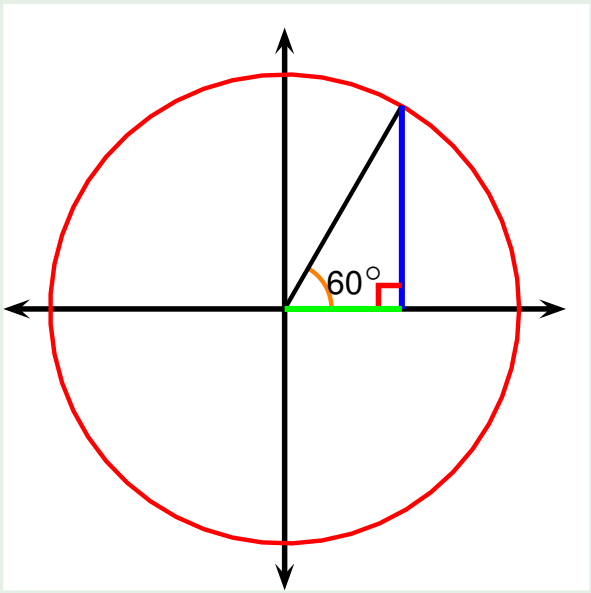
Angle sum f-la





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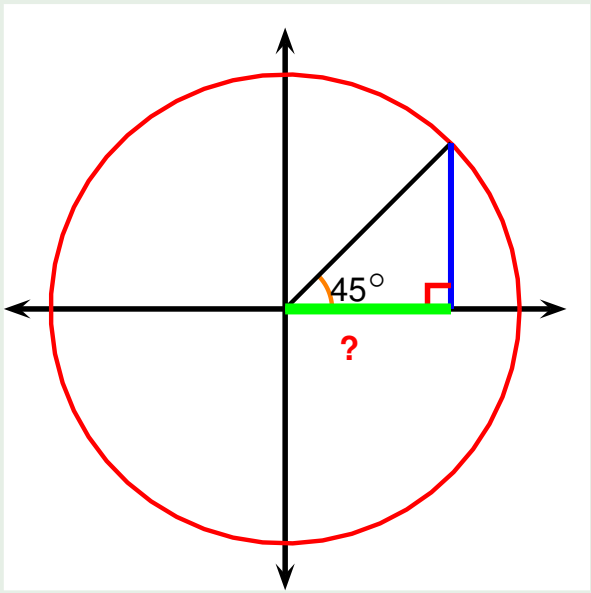
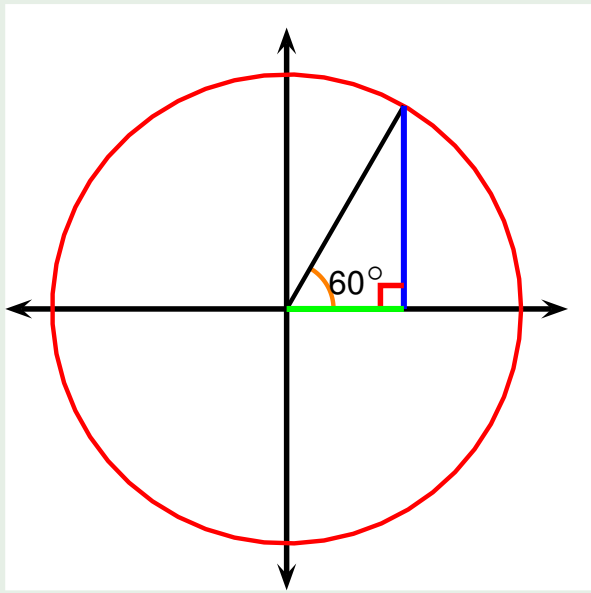
$$= ? \cdot ? - ? \cdot ?$$





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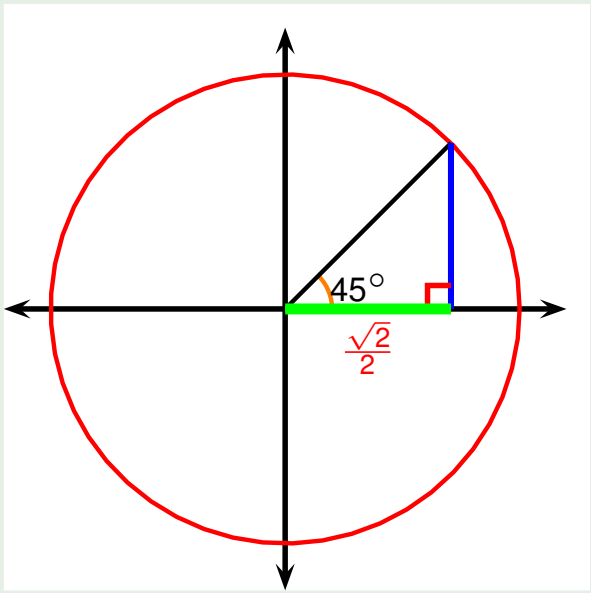
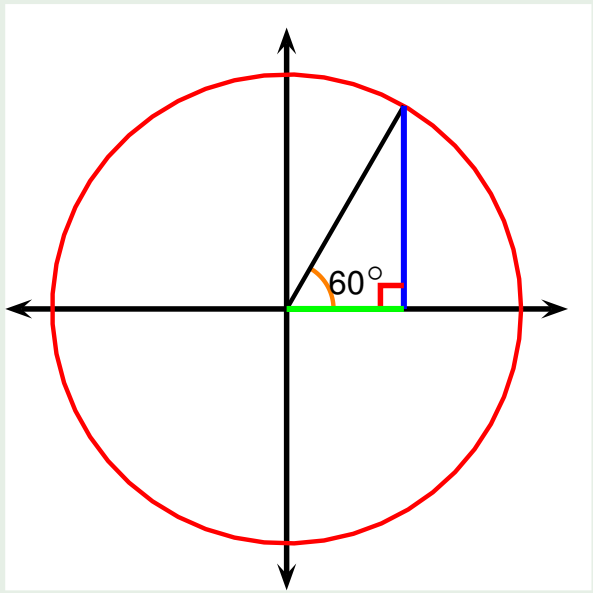
Angle sum f-la

$$= \frac{\sqrt{2}}{2} \cdot \mathbf{?} - \mathbf{?} \cdot \mathbf{?}$$





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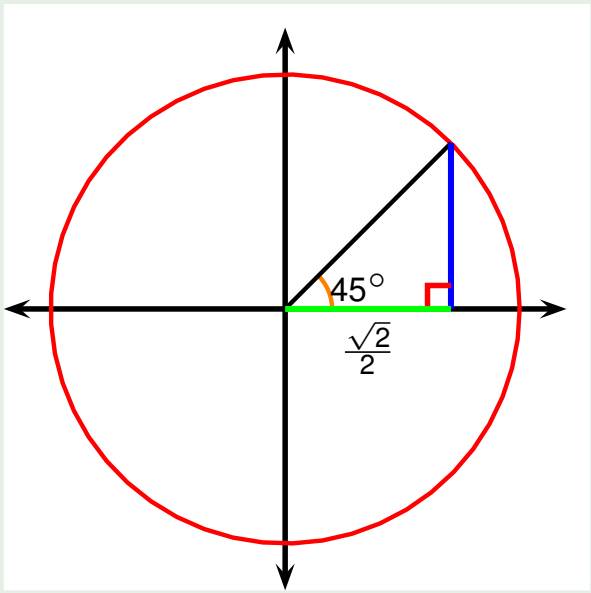

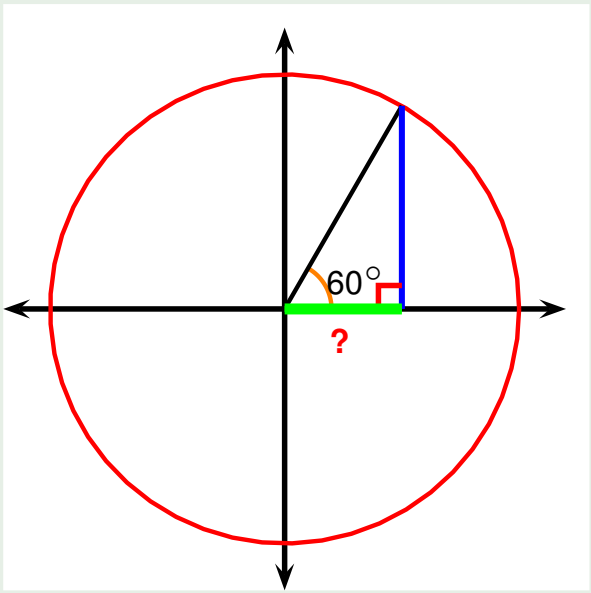

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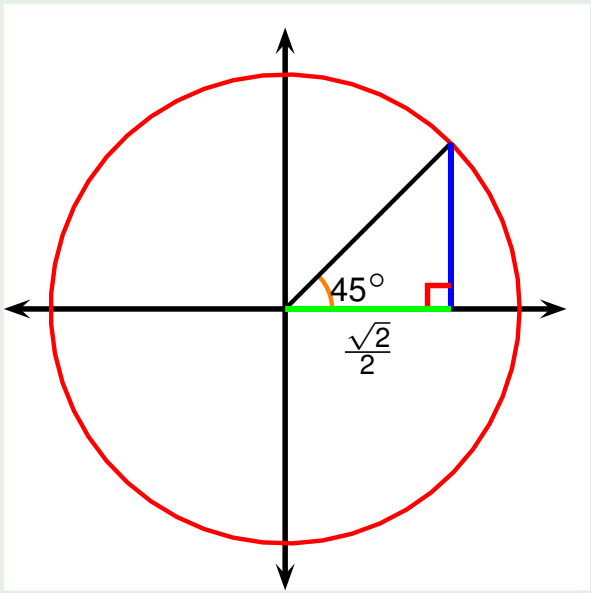

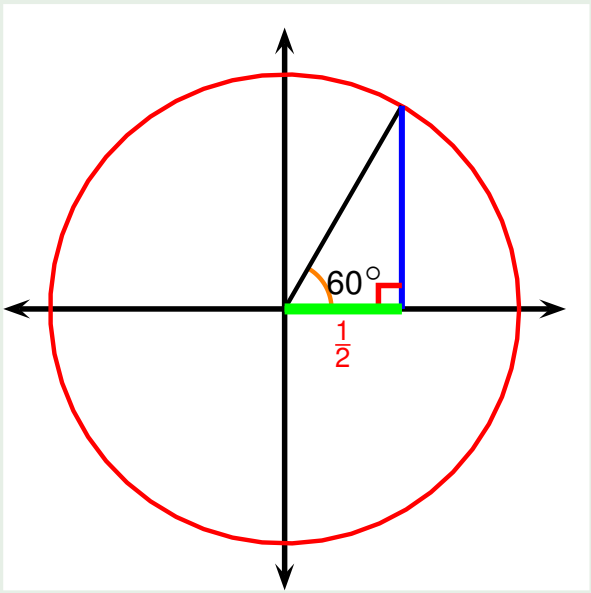

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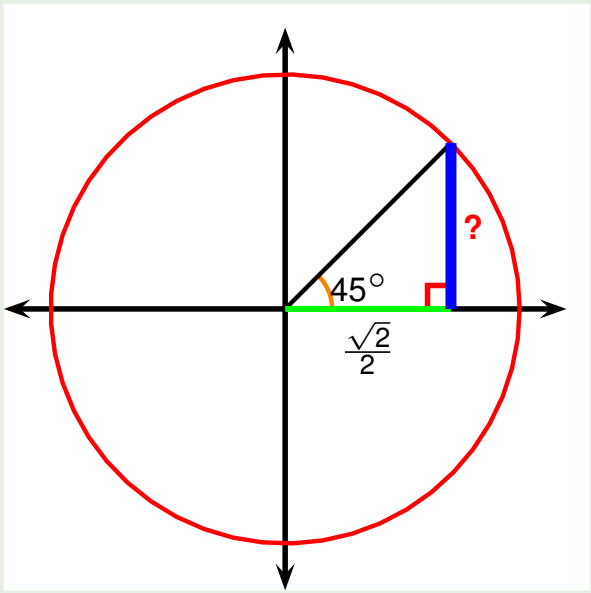

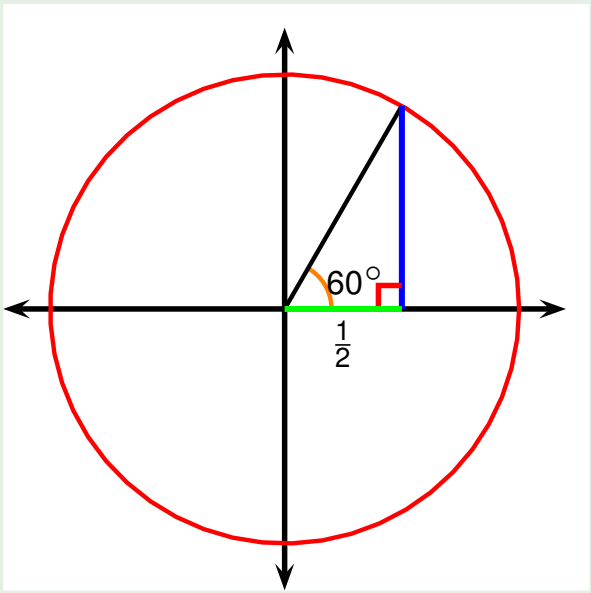

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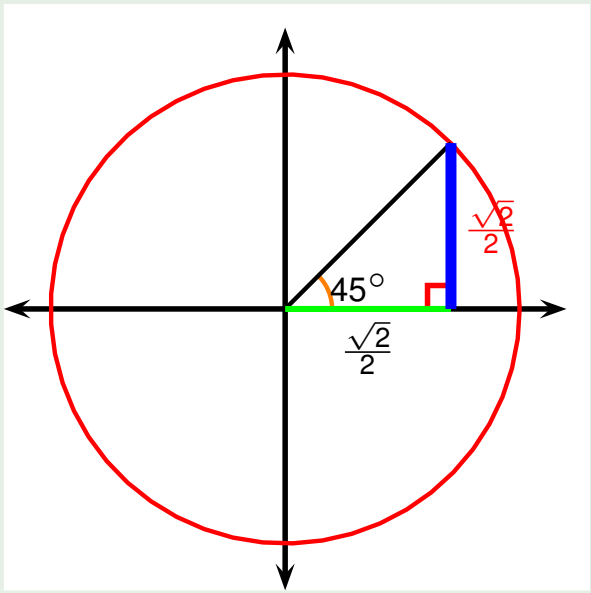

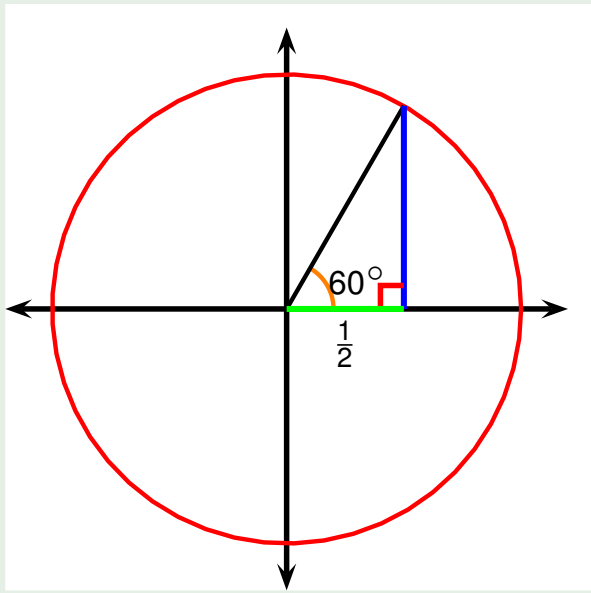

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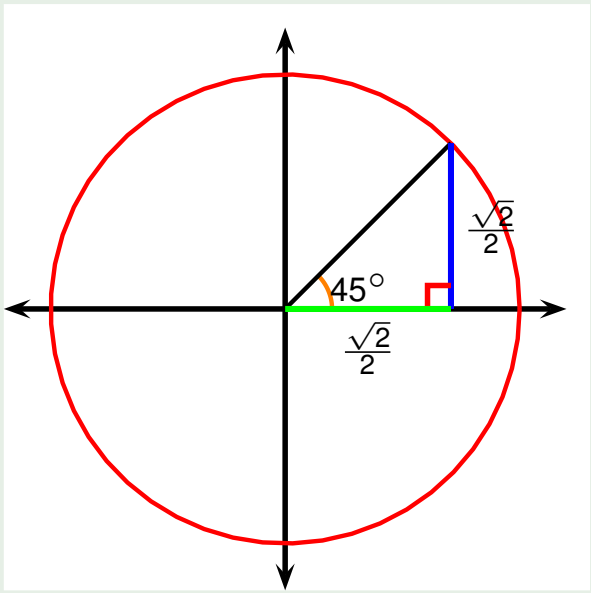

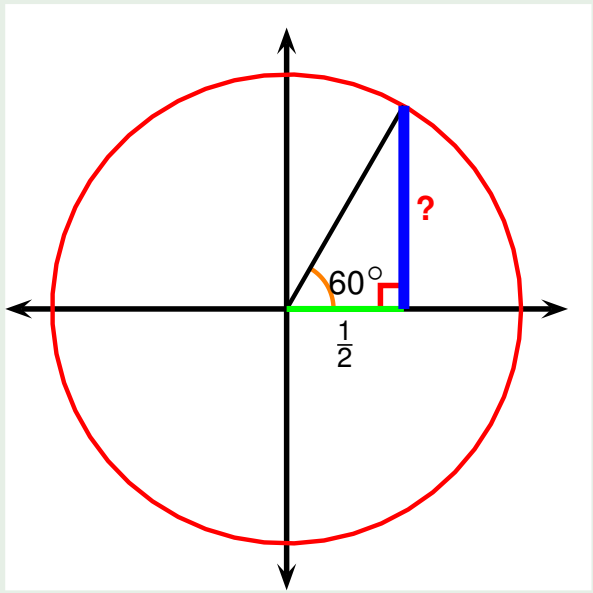

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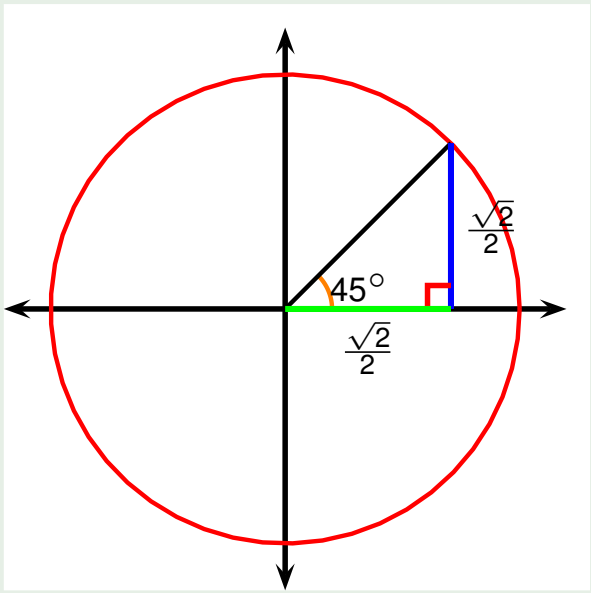

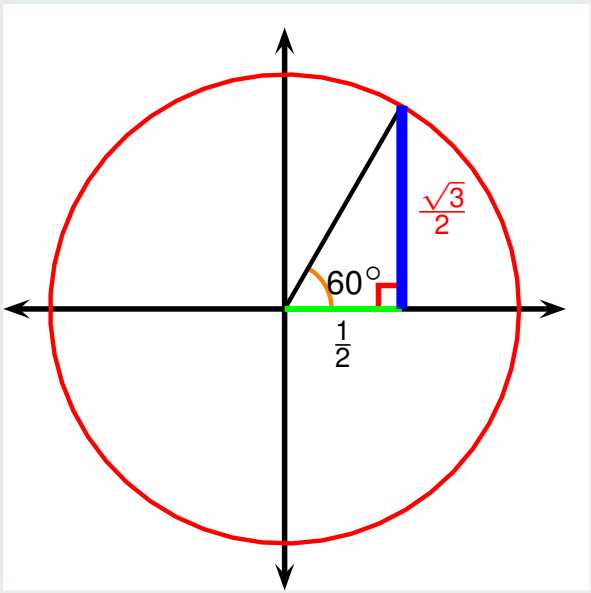

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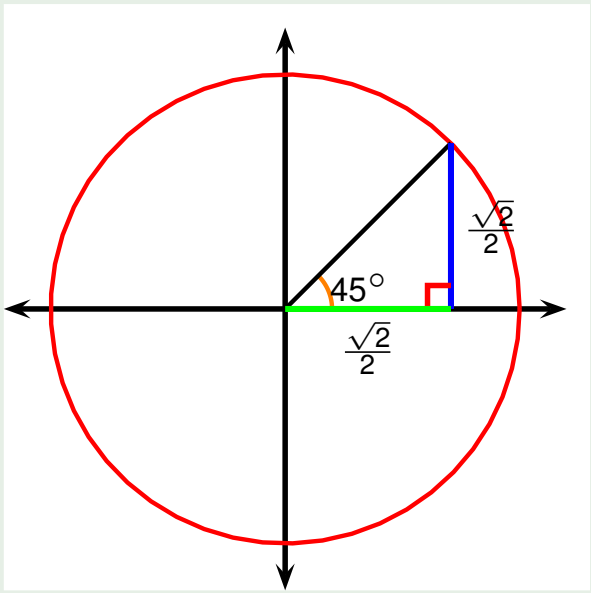
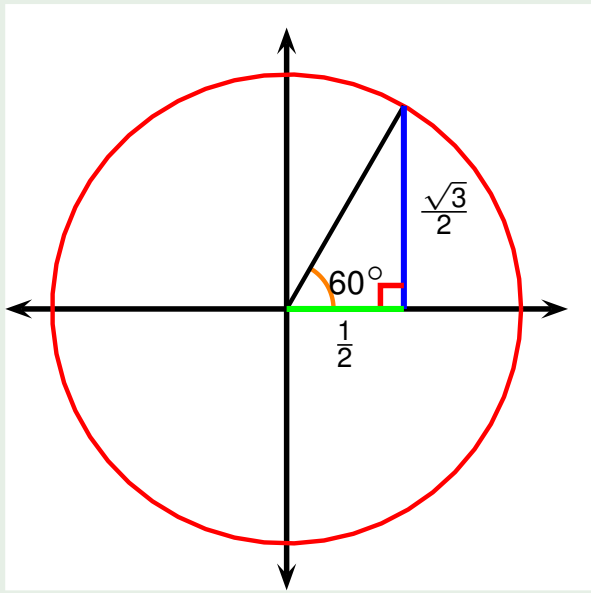
$$= \frac{\sqrt{2} - \sqrt{6}}{4}.$$





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