CAST Rule - Find Angles Greater than 90°

Learning Goal: By the end of this section, I will be able to recognize trigonometric problems that have more than one solution, and I will be able to find those solutions.

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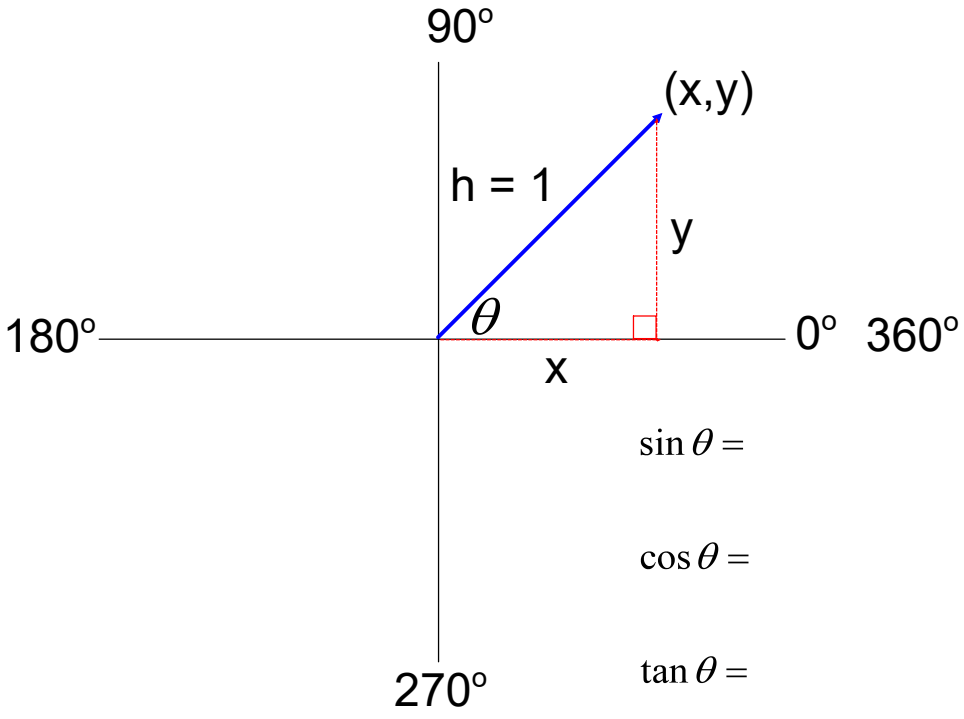
Using the Unit Circle to Solve Problems



$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

Notice All ratios are positive.

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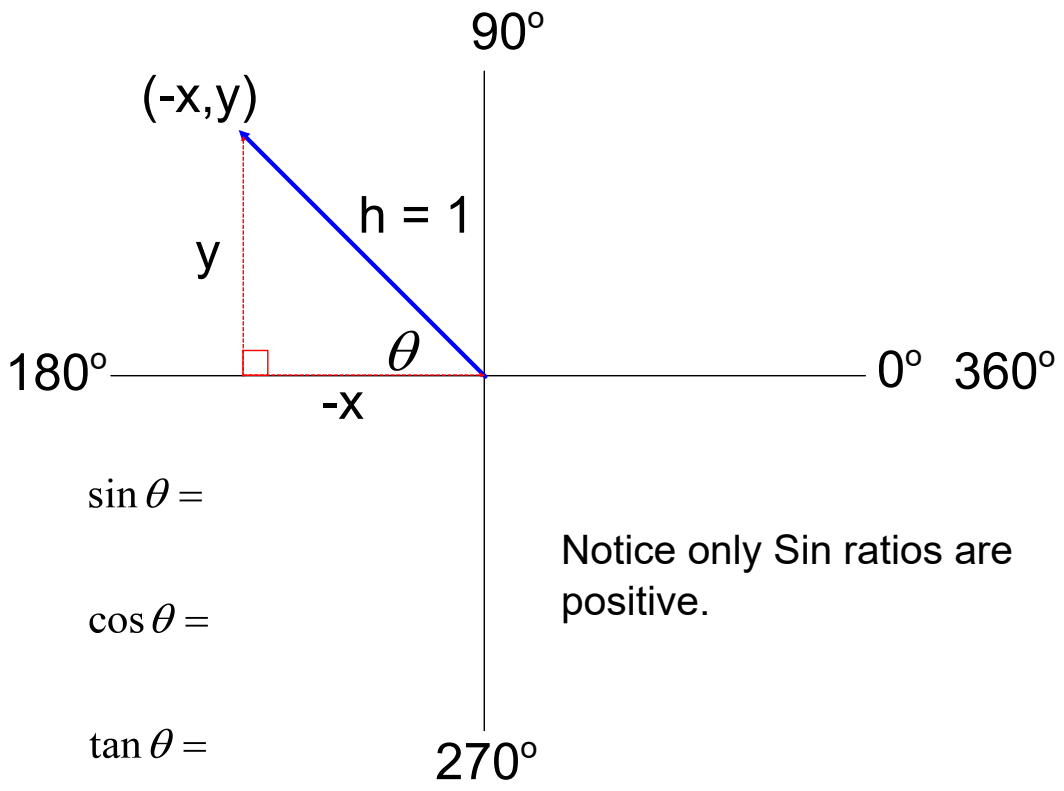
Using the Unit Circle to Solve Problems



$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

Notice only Sin ratios are positive.

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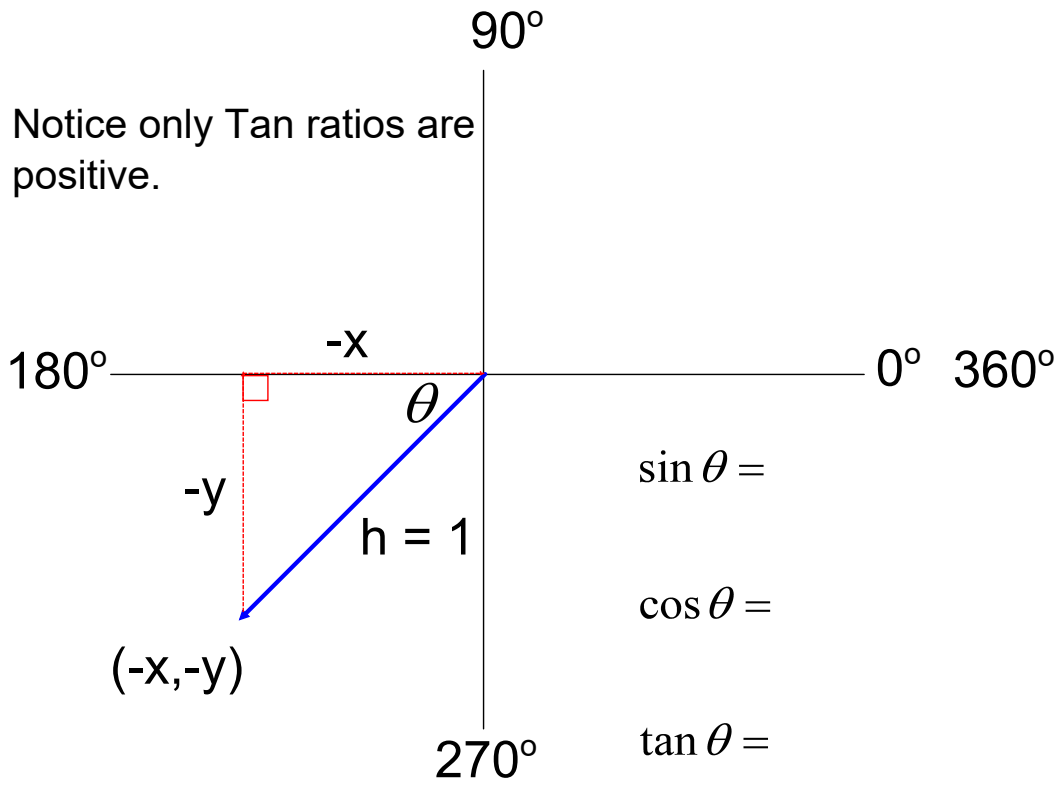
Using the Unit Circle to Solve Problems



Notice only Tan ratios are positive.

$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

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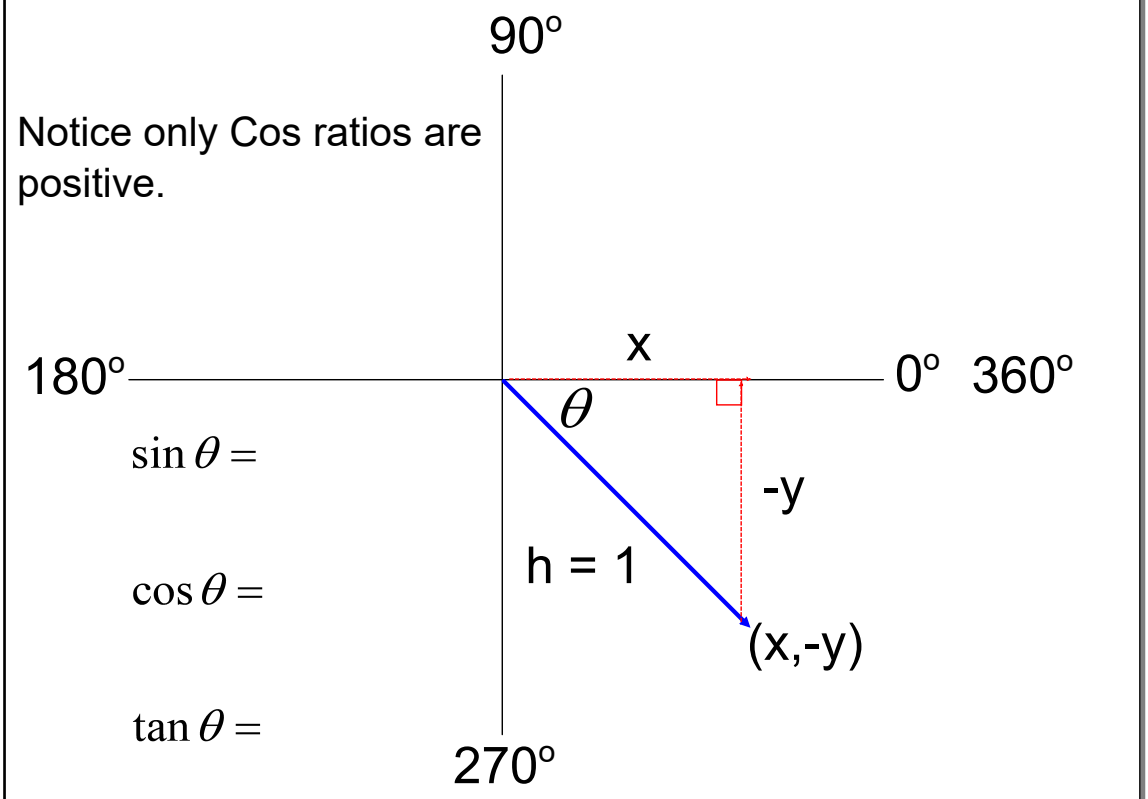
Using the Unit Circle to Solve Problems



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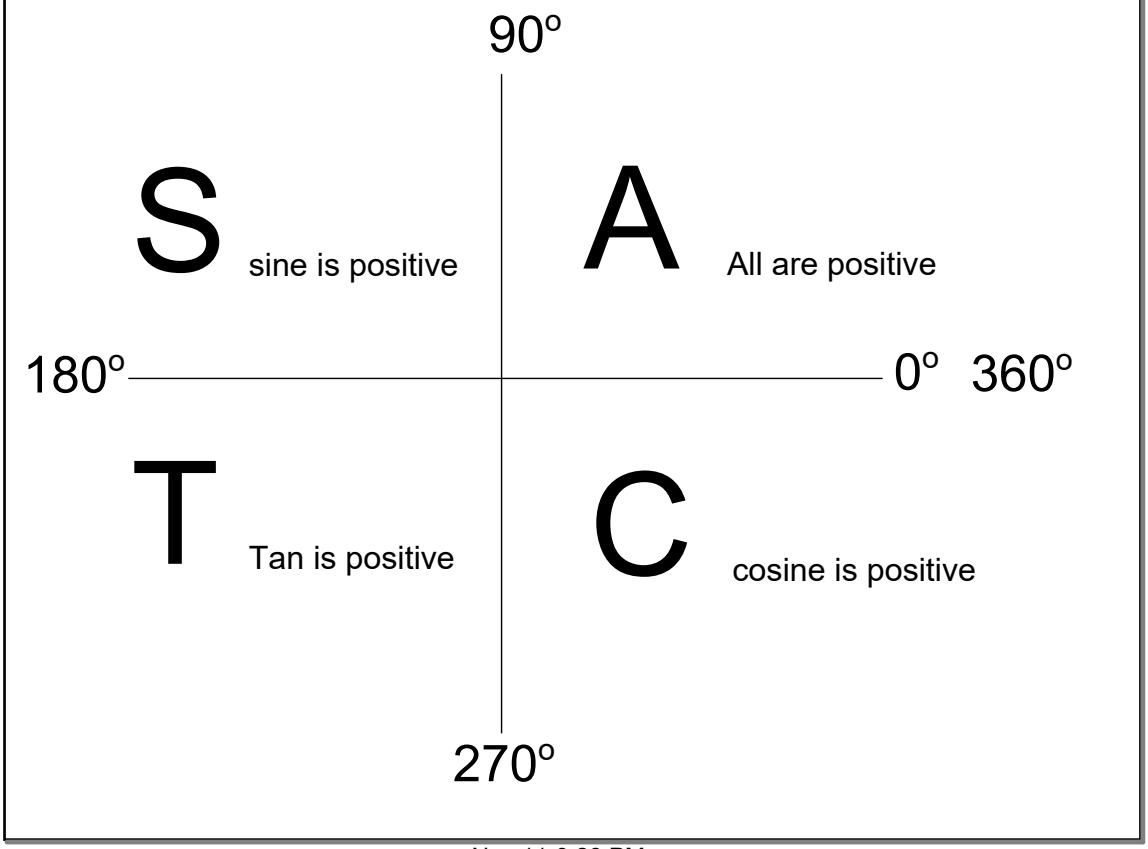
CAST Rule is an acronym for where positive ratios are found.



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Solving Strategies

Solve for the unknown angle on an interval of 0 to 360 degrees.

$$\sin A = \frac{4}{9}$$

1. draw and label an axis with CAST
2. draw triangles in the quadrants where the answer might be found - shade out where is can't be found
3. use your calculator to find the (inverse/shift/arc) angle
4. decide if this is a reference angle or the answer (your calculator has limits - it will output the smallest angle, even if it is negative)
5. Use the reference angle to solve for the second angle

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Negative Angles

Positive angles are measured in a counter clockwise direction.

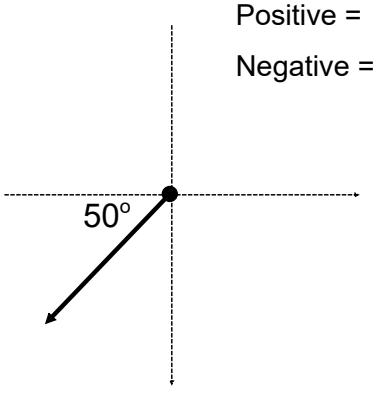
Negative angles are measured in a clockwise direction.

The terminal arm can have both a positive and negative location.

Calculators output the smallest answer, even if it is negative.

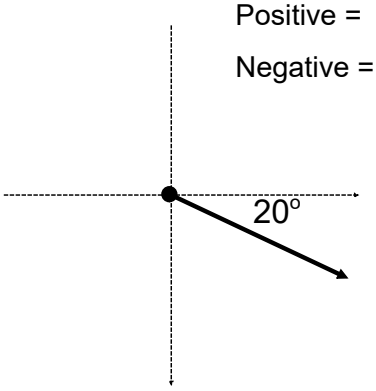
Positive =

Negative =



Positive =

Negative =



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Solving Strategies

Solve for the unknown angle on an interval of 0 to 360 degrees.

$$\cos A = \frac{7}{12}$$

1. draw and label an axis with CAST
2. draw triangles in the quadrants where the answer might be found - shade out where is can't be found
3. use your calculator to find the (inverse/shift/arc) angle
4. decide if this is a reference angle or the answer (your calculator has limits - it will output the smallest angle, even if it is negative)
5. Use the reference angle to solve for the second angle

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Solving Strategies

Solve for the unknown angle on an interval of 0 to 360 degrees.

$$\tan A = 1.8$$

1. draw and label an axis with CAST
2. draw triangles in the quadrants where the answer might be found - shade out where is can't be found
3. use your calculator to find the (inverse/shift/arc) angle
4. decide if this is a reference angle or the answer (your calculator has limits - it will output the smallest angle, even if it is negative)
5. Use the reference angle to solve for the second angle

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Solving Strategies

Solve for the unknown angle on an interval of 0 to 360 degrees.

$\sin A = -0.65$

1. draw and label an axis with CAST
2. draw triangles in the quadrants where the answer might be found - shade out where is can't be found
3. use your calculator to find the (inverse/shift/arc) angle
4. decide if this is a reference angle or the answer (your calculator has limits - it will output the smallest angle, even if it is negative)
5. Use the reference angle to solve for the second angle

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Solving Strategies

Solve for the unknown angle on an interval of 0 to 360 degrees.

$\cos A = -0.9$

1. draw and label an axis with CAST
2. draw triangles in the quadrants where the answer might be found - shade out where is can't be found
3. use your calculator to find the (inverse/shift/arc) angle
4. decide if this is a reference angle or the answer (your calculator has limits - it will output the smallest angle, even if it is negative)
5. Use the reference angle to solve for the second angle

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Homework

Page 299-301 #2,4, 6,8,9

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Attachments

RelationshipOfSineAndCosineToTheUnitCircle.cdf

4-4 Cast questions.pdf