

Homework 7-1

1. B because Pyth. Thm. doesn't work
2. 22.7 ft
3. 10 miles
4. 12/13
5. $a = 9.0$, $c = 19.3$
6. 12.3 ft
7. 25.2 m
8. see next slide
9. 48.8°

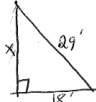
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Name: Key Algebra 2 Homework 7-1
Period: _____

1. Which of the following sets of side lengths cannot form a right triangle? Explain why.

a. 3, 4, 5	b. <u>5, 6, 8</u>	c. 8, 15, 17	d. 5, 12, 13
$3^2 + 4^2 = 5^2$ yes	$5^2 + 6^2 \neq 8^2$ NO	$8^2 + 15^2 \neq 17^2$ yes	$5^2 + 12^2 = 13^2$ yes

2. A 29-foot ladder leans against a wall. If the base of the ladder is 18 feet from the wall, to the nearest tenth, how far up the wall is the top of the ladder?



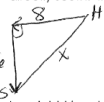
$$x^2 + 18^2 = 29^2$$

$$x^2 + 324 = 841$$

$$x^2 = 517$$

$$x = \sqrt{517} \approx 22.7 \text{ ft.}$$

3. To get from his house to the grocery store, Tom must drive 8 miles directly west and then 6 miles directly south. If he were to travel by helicopter, how far is Tom's house from the grocery store?



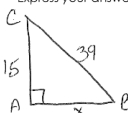
$$6^2 + 8^2 = x^2$$

$$100 = x^2$$

$$10 = x$$

10 miles

4. In a right triangle with acute angles C and B, the value of $\sin(B) = \frac{15}{39}$. Find the value of $\sin(C)$. Express your answer as a fraction in lowest terms.



$$15^2 + x^2 = 39^2$$

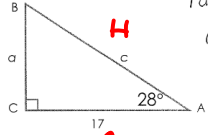
$$225 + x^2 = 1521$$

$$x^2 = 1296$$

$$x = 36$$

$$\sin(C) = \frac{36}{39} = \frac{12}{13}$$

5. What are the lengths of sides a and c in the triangle below? State your answers to the nearest tenth.



$$\tan 28^\circ = \frac{a}{17}$$

$$a = 17 \tan 28^\circ \approx 9.0$$


$$\cos 28^\circ = \frac{17}{c}$$

$$c \cos 28^\circ = 17$$

$$c = \frac{17}{\cos 28^\circ} \approx 19.3$$


6. A painter uses a 15-foot ladder. When he rests the top of the ladder against the wall, the ladder makes a 55° angle with the floor. How far up the wall does the top of the ladder reach? Round our answers to the nearest tenth of a foot.

$\sin 55^\circ = \frac{x}{15}$
 $x = 15 \sin 55^\circ = 12.3 \text{ ft}$



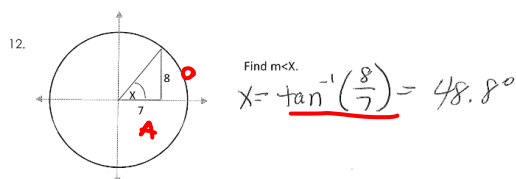
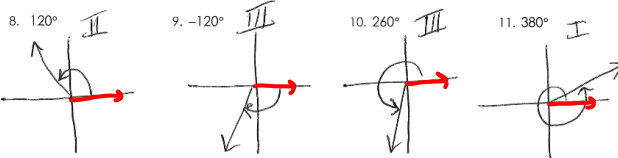
7. Carrie measures the angle from the ground to the top of a tree as 40° . If she is 30 meters from the base of the tree, to the nearest tenth, how tall is the tree?

$\tan 40^\circ = \frac{x}{30}$
 $x = 30 \tan 40^\circ = 25.2 \text{ m}$



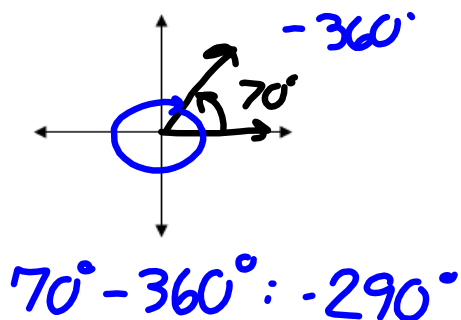
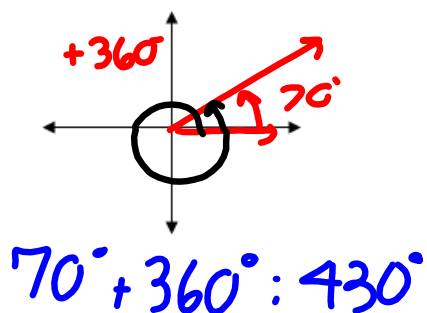
For the following angles: **A**

- a. Sketch the angle on standard position
 b. Determine which quadrant the angle terminates in



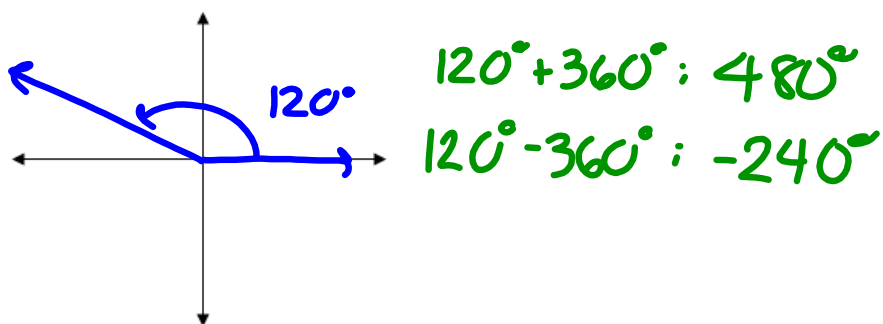
Day 2 – Co-Terminal Angles, Quadrantals and the Unit Circle

Co-terminal Angles: angles that share the same terminal side.
 To find positive and negative co-terminal angles, add and subtract 360° to/from the angle. For example, two of the co-terminal angles for 70° are:



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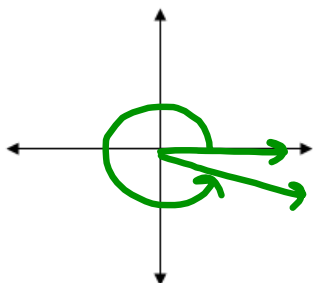
Find a positive and negative angle co-terminal with an angle of 120°



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You try:

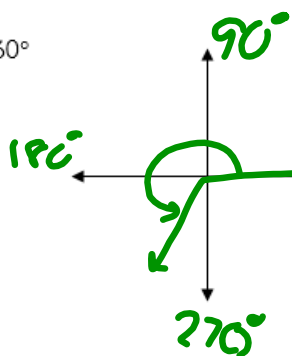
- Determine the quadrant in which the angle lies.
- Find the measures of a positive and negative angle that are coterminal with the given angle.

1. 350° 

$$350^\circ + 360^\circ = 710^\circ$$

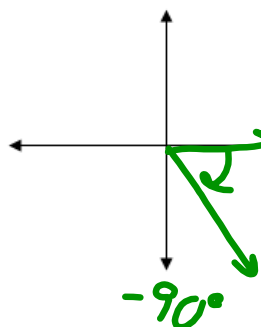
$$350^\circ - 360^\circ = -10^\circ$$

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2. 260° 

$$260^\circ + 360^\circ = 620^\circ$$

$$260^\circ - 360^\circ = -100^\circ$$

3. -70° 

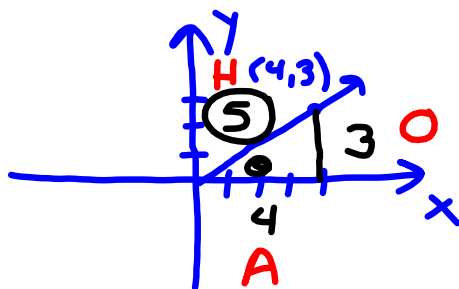
$$-70^\circ + 360^\circ = 290^\circ$$

$$-70^\circ - 360^\circ = -430^\circ$$

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4. The terminal side of $\angle\theta$ passes through the point $(4, 3)$. What are the sine, cosine and tangent of $\angle\theta$? Also, find $m\angle\theta$.

* **Hint:** Draw the angle in standard position first.



$$\sin(\theta) = \frac{3}{5}$$

$$\cos(\theta) = \frac{4}{5}$$

$$\tan(\theta) = \frac{3}{4}$$

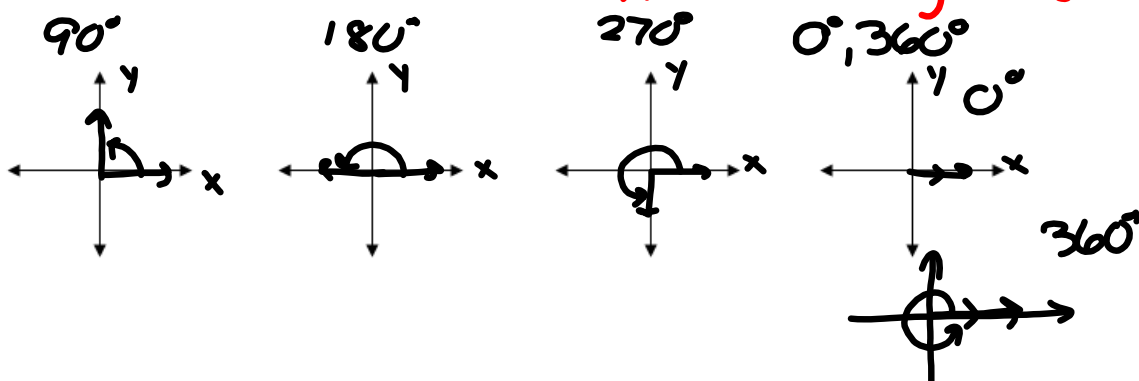
$$m\angle\theta = \sin^{-1}\left(\frac{3}{5}\right) = 37^\circ$$

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Quadrantal Angles and the Unit Circle

Quadrantal Angles

Def: Angles whose terminal side is on the x-axis or y-axis



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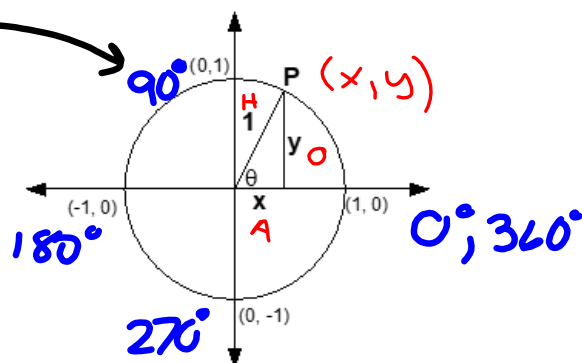
Unit Circle →

radius = 1

$$\sin(\theta) = \frac{y}{r} = y$$

$$\cos(\theta) = \frac{x}{r} = x$$

$$\tan(\theta) = \frac{y}{x}$$

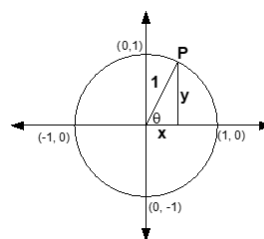
Coordinates of P: $(\cos\theta, \sin\theta)$ 

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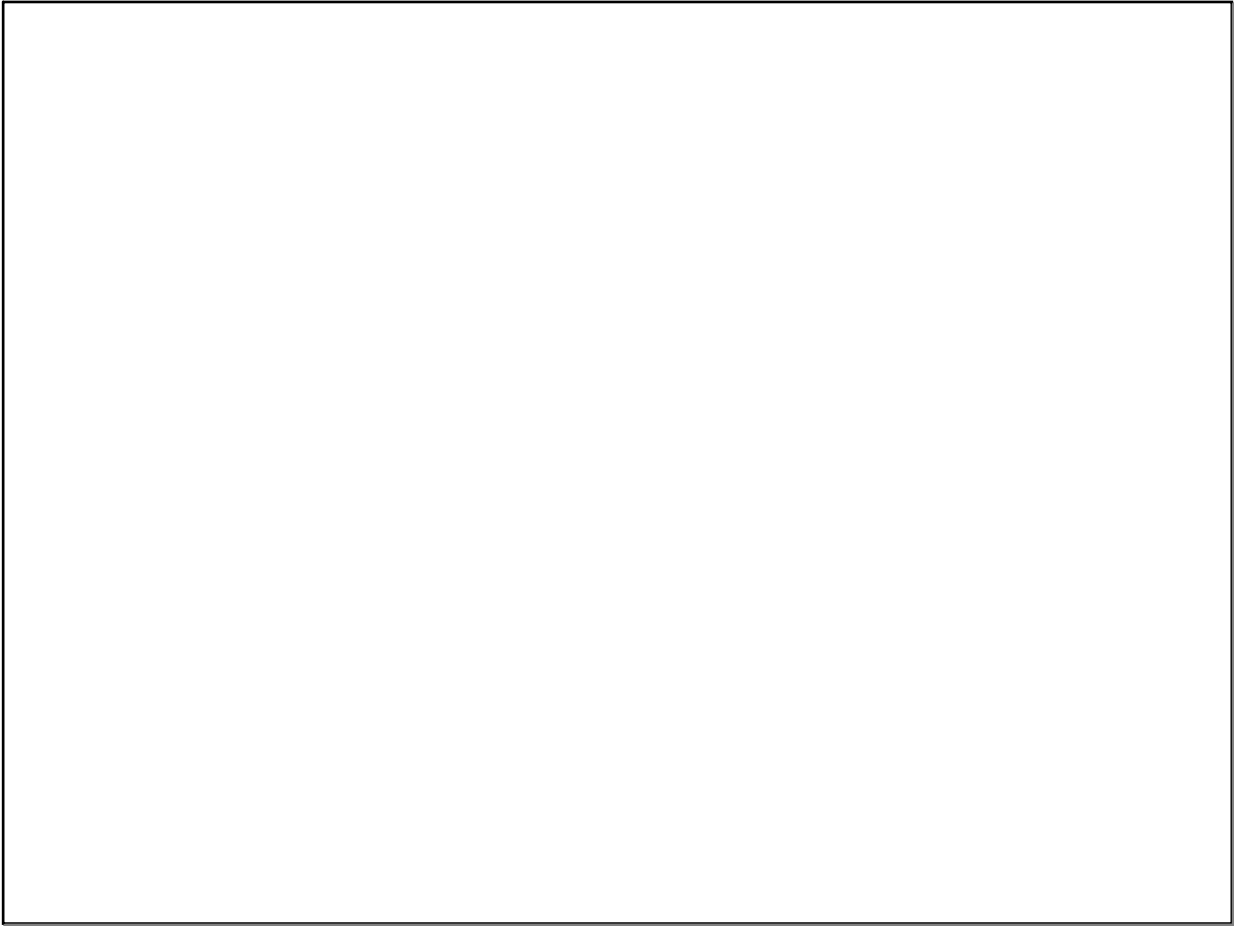
Sine, Cosine and Tangent of Quadrantals:

Degrees	0°	90°	180°	270°	360°
Radians					
$\sin(\theta)$	0	1	0	-1	0
$\cos(\theta)$	1	0	-1	0	1
$\tan(\theta)$	0	undef	0	und	0

** Tomorrow we will fill in the Radians row.

$$\frac{1}{0} \quad \frac{0}{-1}$$


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