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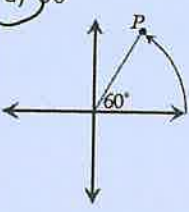
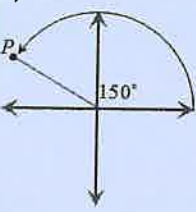
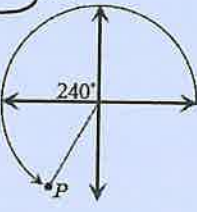
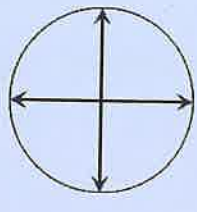
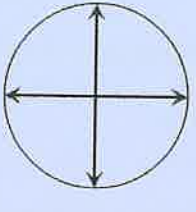
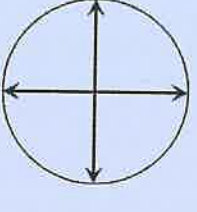
### HW PC 11 Ch 2.2 Trig Ratios of Sine Cosine and Tangent Functions

1. If  $\sin \theta$  is equal to a negative ratio, then which quadrants will the angle be? What if the ratio is positive, which quadrant is it in?
  
2. If  $\cos \theta$  is equal to a negative ratio, then which quadrants will the angle be? What if the ratio is positive, which quadrant is it in?
  
3. If  $\tan \theta$  is equal to a negative ratio, then which quadrants will the angle be? What if the ratio is positive, which quadrant is it in?
  
4. If  $\theta$  is in quadrant 3, then which trig ratio will be negative?  $\sin \theta$   $\cos \theta$  or  $\tan \theta$ ?
  
5. If  $\theta$  is in quadrant 4, then which trig ratio will be negative?  $\sin \theta$   $\cos \theta$  or  $\tan \theta$ ?

6. Determine each trig ratio without using a calculator.

a) $\cos 135^\circ$	b) $\tan 270^\circ$	c) $\sin 120^\circ$
d) $\tan 135^\circ$	e) $\cos 225^\circ$	f) $\sin 150^\circ$
g) $\tan 150^\circ$	h) $\sin(-300^\circ)$	i) $\cos 180^\circ$

7. A point "P" created by the endpoint of a terminal arm is on the circumference of a unit circle of radius 1. Given the angle in standard position, find the coordinates of point 'P'.

<p>a) <math>60^\circ</math></p> 	<p>b) <math>150^\circ</math></p> 	<p>c) <math>240^\circ</math></p> 
<p>d) <math>225^\circ</math></p> 	<p>e) <math>300^\circ</math></p> 	<p>f) <math>315^\circ</math></p> 

8. Given each trig ratio, find the specified trig ratio without using a calculator:

<p>a) <math>\sin \theta = 0.5</math></p> <p><math>\cos \theta =</math></p> <p><math>\tan \theta =</math></p>	<p>b) <math>\cos \theta = \frac{-\sqrt{2}}{2}</math></p> <p><math>\sin \theta =</math></p> <p><math>\tan \theta =</math></p>	<p>c) <math>\tan \theta = -\sqrt{3}</math></p> <p><math>\cos \theta =</math></p> <p><math>\sin \theta =</math></p>
<p>d) <math>\sin \theta = \frac{1}{\sqrt{2}}</math></p> <p><math>\cos \theta =</math></p> <p><math>\tan \theta =</math></p>	<p>e) <math>\cos \theta = \frac{-\sqrt{3}}{2}</math></p> <p><math>\sin \theta =</math></p> <p><math>\tan \theta =</math></p>	<p>f) <math>\tan \theta = \frac{1}{\sqrt{3}}</math></p> <p><math>\cos \theta =</math></p> <p><math>\sin \theta =</math></p>

9. Solve for  $\theta$ , with  $0 \leq \theta \leq 360^\circ$ .

<p>a) <math>\sin \theta = 0.8</math></p>	<p>b) <math>\cos \theta = 0.85</math></p>	<p>c) <math>\tan \theta = 0.3</math></p>
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3. What does it mean that an angle is in standard position? Explain:

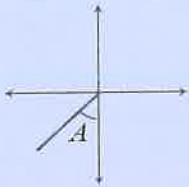
4. What is the smallest positive co-terminal angle of  $2000^\circ$ ? Which quadrant is it in?

5. Give a general formula for all the co-terminal angles of  $-5200^\circ$

6. Write a general formula for all co-terminal angles of a)  $75^\circ$  b)  $-200^\circ$

7. An angle in quadrant 3 has a reference angle of  $31^\circ$ . If the angle is greater than  $600^\circ$ , then what is the smallest possible answer?

8. Given  angle "A" is  $47^\circ$ , what is the value of the angle in standard position?



9. Angle "x" is between   $0^\circ$  and  $360^\circ$ , and has a reference angle of  $24^\circ$ . What are all the possible values of angle "x"?

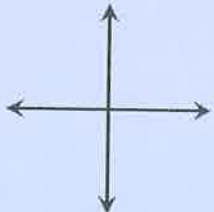
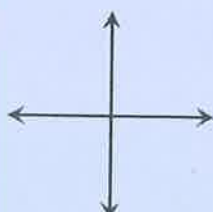
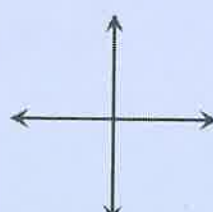
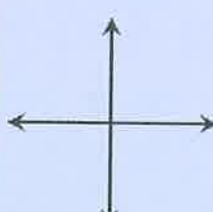
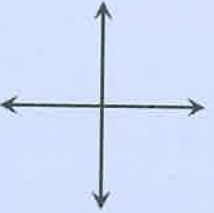
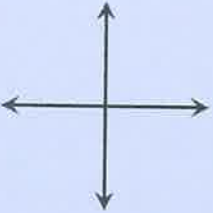
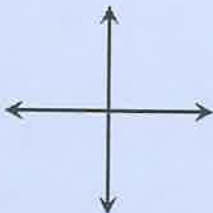
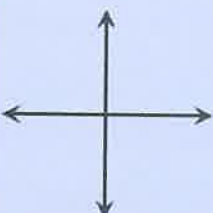
# ASSIGNMENT #3

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Pre-Calculus 11: HW 2.1 Angles in Standard Position

1. Draw each angle in standard position then find the value of the reference angle:

<p>a) <math>120^\circ</math></p>  <p>Reference Angle:</p>	<p>b) <math>-300^\circ</math></p>  <p>Reference Angle:</p>	<p>c) <math>235^\circ</math></p>  <p>Reference Angle:</p>	<p>d) <math>-420^\circ</math></p>  <p>Reference Angle:</p>
<p>e) <math>800^\circ</math></p>  <p>Reference Angle:</p>	<p>f) <math>1000^\circ</math></p>  <p>Reference Angle:</p>	<p>g) <math>-500^\circ</math></p>  <p>Reference Angle:</p>	<p>h) <math>-3000^\circ</math></p>  <p>Reference Angle:</p>

2. Given each pair of angles, indicate whether if they are co-terminal. Show your work to justify your answer:

<p>a) <math>35^\circ, 695^\circ</math></p>	<p>b) <math>90^\circ, 330^\circ</math></p>	<p>c) <math>720^\circ, 1080^\circ</math></p>
<p>d) <math>-475^\circ, 605^\circ</math></p>	<p>e) <math>-2590^\circ, 290^\circ</math></p>	<p>f) <math>1825^\circ, 375^\circ</math></p>

a) $\sin \theta = -0.9$	b) $\cos \theta = 0.125$	c) $\tan \theta = 0.25$
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10. The point  $(-3, 5)$  is on the terminal arm of angle  $\theta$  in standard position. Find the angle in radians to one decimal place .

11. The angle  $\theta$  is in the third quadrant and  $\cos \theta = -\frac{4}{5}$ . Draw a diagram to show the angle in standard position and then find the coordinates for "P"

12. If  $\tan \theta = -\frac{2}{\sqrt{7}}$ , angle  $\theta$  is in standard position, and its terminal arm is in quadrant II. What is the exact value of  $\cos \theta$ ?

13. If  $\sin \theta = -\frac{2}{7}$ , draw a diagram to show the angle(s) in standard position and the possible coordinates for point "P". Then determine the value(s) of  $\cos \theta$  and  $\tan \theta$

14. Point  $P(3,-5)$  is on the terminal arm of an angle in standard position. What is the value of  $\sin \theta \times \cos \theta$ ?

15. What is the value of  $\sin \theta \times \tan \theta$  if point  $P(1.957, -0.412)$  is on the terminal arm of a circle with a radius of 2 units long?

16. If  $\cos \theta = \frac{2a}{3}$ , then what is the value of  $\tan \theta$  in terms "a"?

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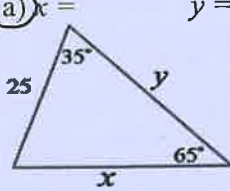
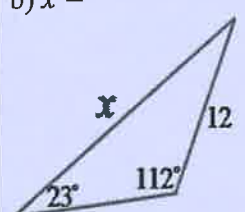
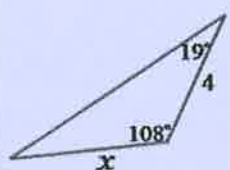
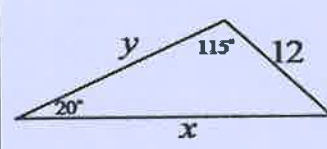
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**Pre-Calculus 11: HW 2.3 Sine Law**

1. Given each equation, solve for all values of  $\theta$  where  $0 \leq \theta \leq 180^\circ$

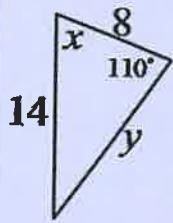
a) $\sin \theta = 0.25$	b) $\sin \theta = 0.85$	c) $\sin \theta = \frac{\sqrt{3}}{2}$	d) $\sin \theta = \frac{\sqrt{2}}{2}$
e) $\sin \theta = 1.2$	f) $\sin \theta = -0.25$	g) $\sin \theta = 0$	h) $\sin \theta = 1$

2. Given each triangle, find the value of any missing side or angle "x" and "y". Show all your work

<p>a) <math>x =</math>      <math>y =</math></p> 	<p>b) <math>x =</math></p> 
<p>c) <math>x =</math></p> 	<p>d) <math>x =</math>      <math>y =</math></p> 

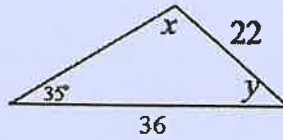
e)  $x =$

$y =$



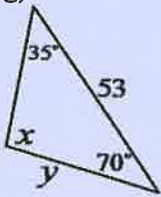
f)  $x =$

$y =$



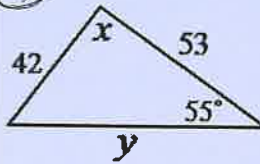
g)  $x =$

$y =$



h)  $x =$

$y =$

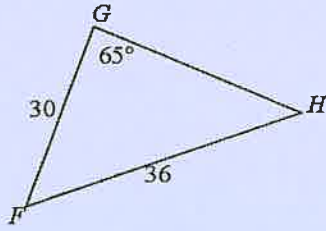


3. Given that  $a = 14\text{cm}$ ,  $b = 18\text{cm}$ , and  $\angle A = 41^\circ$ , find the area of  $\triangle ABC$ .

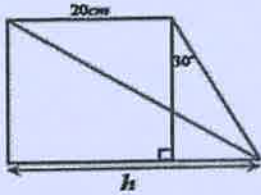
4. Given that  $a = 14\text{cm}$ ,  $\angle B = 70^\circ$ , and  $\angle A = 35^\circ$ , find the area of  $\triangle ABC$ .



5. Find the value of angle "F"



6. Calculate the length of "x" to 1 decimal place



7. An observer is looking at a mountain peak at an angle of elevation of 35 degrees. He walks 250 meters towards the mountain and the angle of elevation to the peak is 39 degrees. What is the height of the mountain?



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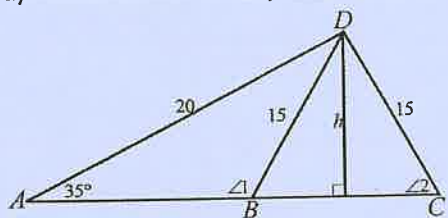
**Pre-Calculus 11: HW 2.3b Ambiguous Case of Sine Law**

1. Given each equation, solve for all values of  $\theta$  where  $0 \leq \theta \leq 360^\circ$ . Note: There are two angles!!

<p>a) <math>\sin \theta = \frac{2}{3}</math></p> <p><math>\theta_1 = \underline{\hspace{2cm}}</math>   <math>\theta_2 = \underline{\hspace{2cm}}</math></p>	<p>b) <math>\sin \theta = \frac{4}{5}</math></p> <p><math>\theta_1 = \underline{\hspace{2cm}}</math>   <math>\theta_2 = \underline{\hspace{2cm}}</math></p>	<p>c) <math>\sin \theta = -0.55</math></p> <p><math>\theta_1 = \underline{\hspace{2cm}}</math>   <math>\theta_2 = \underline{\hspace{2cm}}</math></p>
<p>d) <math>\sin \theta = \frac{-\sqrt{2}}{2}</math></p> <p><math>\theta_1 = \underline{\hspace{2cm}}</math>   <math>\theta_2 = \underline{\hspace{2cm}}</math></p>	<p>e) <math>\sin \theta = \frac{-\sqrt{3}}{2}</math></p> <p><math>\theta_1 = \underline{\hspace{2cm}}</math>   <math>\theta_2 = \underline{\hspace{2cm}}</math></p>	<p>f) <math>\sin \theta = \frac{4}{\sqrt{7}}</math></p> <p><math>\theta_1 = \underline{\hspace{2cm}}</math>   <math>\theta_2 = \underline{\hspace{2cm}}</math></p>

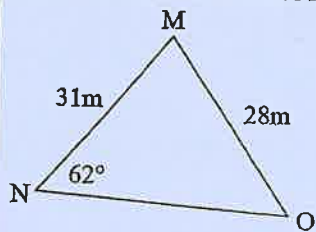
2. Given each triangle, find the missing values and show all your work

a) Find the value of  $\angle 1$ ,  $\angle 2$ ,  $h$ ,  $BC$ , and  $AB$



$\angle 1 = \underline{\hspace{2cm}}$     $\angle 2 = \underline{\hspace{2cm}}$     $h = \underline{\hspace{2cm}}$     $BC = \underline{\hspace{2cm}}$     $AB = \underline{\hspace{2cm}}$

b) Find the value of  $\angle MON$ ,  $\angle OMN$ , and  $\overline{ON}$ .



$\angle MON = \underline{\hspace{2cm}}$  (ACUTE)

$\angle OMN = \underline{\hspace{2cm}}$

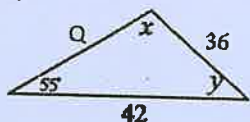
$ON = \underline{\hspace{2cm}}$

$\angle MON = \underline{\hspace{2cm}}$  (OBTUSE)

$\angle OMN = \underline{\hspace{2cm}}$

$ON = \underline{\hspace{2cm}}$

e)



$\angle x = \underline{\hspace{2cm}}$  (ACUTE)

$\angle y = \underline{\hspace{2cm}}$

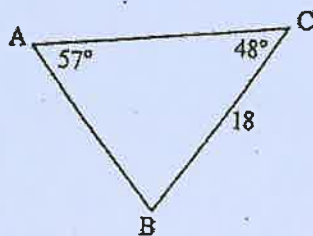
$Q = \underline{\hspace{2cm}}$

$\angle x = \underline{\hspace{2cm}}$  (OBTUSE)

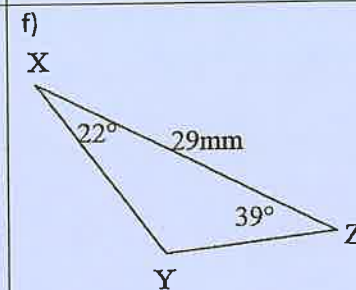
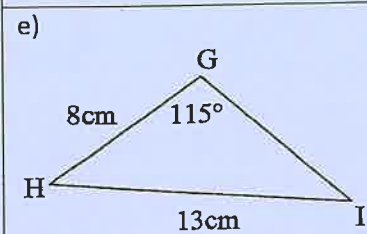
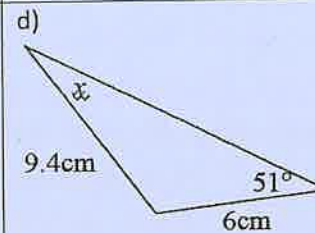
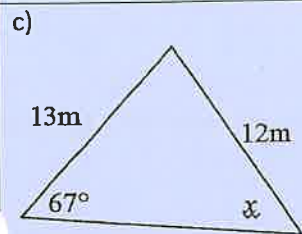
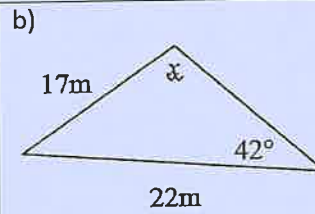
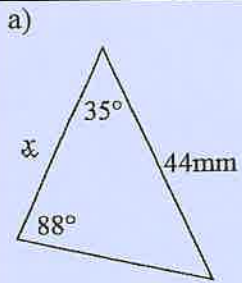
$\angle y = \underline{\hspace{2cm}}$

$Q = \underline{\hspace{2cm}}$

3. Find the area of the following triangle. Note the area of a triangle is  $A = b \times h \times 0.5$ :



4. Given each of the following triangles, indicate whether if there would be an ambiguous case. State the reason why or why not: Solve for "x".



5. A lighthouse at point Q is 20 km from a yacht at point R and 16 km from a sailboat at point S. From the yacht, the lighthouse and the sailboat are separated by an angle of  $39^\circ$

a) Is it necessary to consider the ambiguous case? Explain.

b) Sketch all possible diagrams for this situation.

c) Determine all possible the distances from the yacht to the sailboat, to the nearest tenth of a kilometre.

6. Jason and Sammy are part of a scientific team studying clouds. The team is about to launch a weather balloon into an active part of the cloud. Jason's rope is 15.4 m long and makes an angle of  $42^\circ$  with the ground. Belle's rope is 12.9 m long.

a) Is it necessary to consider the ambiguous case? Explain.

b) Sketch all possible diagrams for this situation.

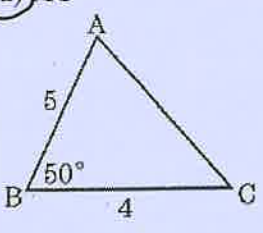
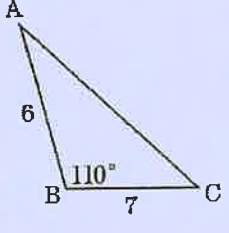
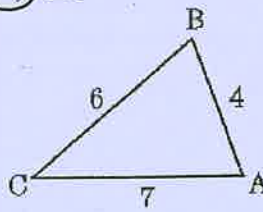
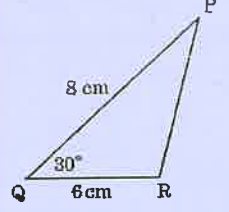
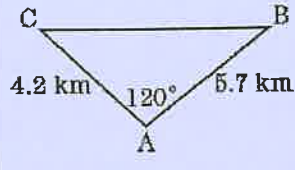
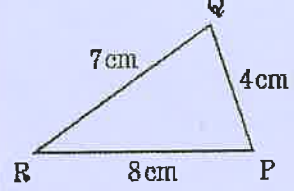
c) Determine all possible the distances between Jason and Sammy to the nearest tenth of a meter.

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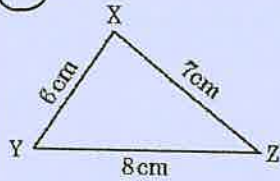
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**Pre-Calculus 11: HW Section 2.4 Cosine Law**

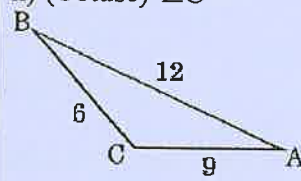
1. Given each triangle, find the value of the indicated side or angle.

<p>a) <math>AC =</math></p> 	<p>b) <math>AC =</math></p> 
<p>c) <math>\angle B =</math></p> 	<p>d) <math>PR =</math></p> 
<p>e) <math>\angle B =</math></p> 	<p>f) <math>\angle Q =</math></p> 

g)  $\angle Z =$

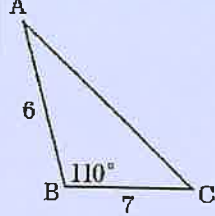


h) (Obtuse)  $\angle C =$



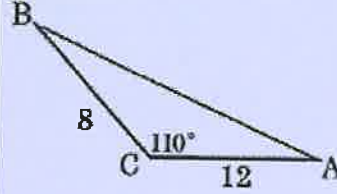
i)  $\angle A =$

$AC =$



j)  $\angle B =$

$BA =$

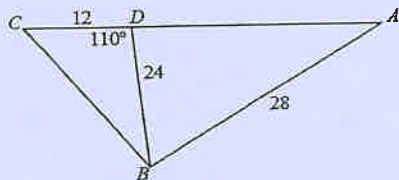


2. Two hikers start out from the same place at 9:00am. The first hiker walks at 4km/h and the second hiker walks at 5km/h. If the angle between the two hikers is  $70^\circ$  then, to 3 decimal places, how far apart are the hikers at 11:30am?

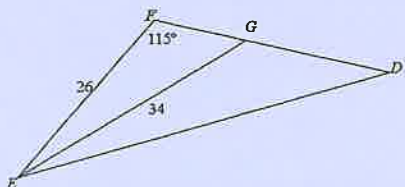
3. Triangle  $\triangle ABC$  has sides of length 7, 12, and 15cm. To the nearest degree, what is the measure of the largest angle of the triangle?



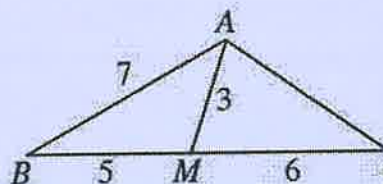
4. Find the measure of angle "A"



5. Given that line  $GE$  bisects angle "E", find the length of  $ED$



6. In  $\triangle ABC$ ,  $M$  is a point on  $BC$  such that  $BM = 5$  and  $MC = 6$ . If  $AM = 3$  and  $AB = 7$ , determine the exact value of  $AC$ .



7. In the diagram,  $AC = 2x$ ,  $BC = 2x + 1$  and  $\angle ACB = 30^\circ$ . If the area of  $\triangle ABC$  is 18, what is the value of  $x$ ?

