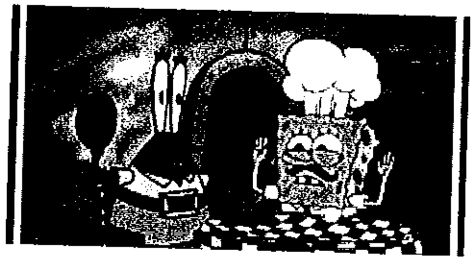
When you're taking a math test and forgot all the equations



Ravioli, ravioli, give me the formuoli!

This packet belongs to___________________Grade_____

Lots of information....

I have dated each of the AMI lessons from here on out. Finish through day 25 (which is April 20) and then begin on the AMI work dated April 21. The last day of school is MAY 8.

Turn in your packets as soon as you get them finished. You can turn them in at Bradbury's, the school drop off, text, or email. I need all the time I can get to grade them.

ALL AMI WORK WILL BE DUE ON MAY 11 AT THE VERY LATEST! NO EXCEPTIONS!!!

I have several no name AMI papers. I have them placed in a box in the lobby. If you find your paper, write your name on it and return it back into the box.

Return your books to me as soon as possible. You can lay them in the hallway outside of my classroom or give them to Monica. I have marked the area in the hallway by my door where you (or Monica) are to lay them depending upon the subject.

I AM MISSING CALCULATOR #26 AND #29.
I NEED THEM BACK IF YOU FORGOT TO RETURN THEM!!!

You can join my Remind group. It is a great way for us to talk back and forth.

Send a text to

81010

Text this message

@k43kg3

Also, email me if you need to...
Mandy.Brown@norfork.k12.ar.us

I guess that's about it! Miss you!!

Mrs. Brown

April 21: Trigonometry

Name____________________

Trigonometry: The Law of Sines

The LAW OF SINES is a powerful triangle tool which is used to find missing **sides** or **angles** of ANY triangle. By matching up angles with their **opposite sides**, the equation is:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

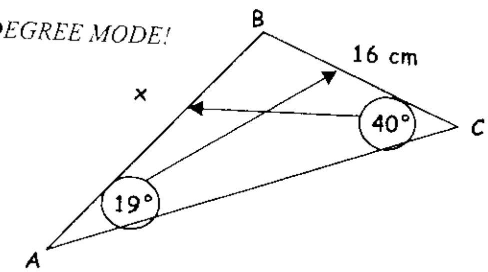
Example: Find the missing side x:

How about finding the other unknowns?

$$\frac{\sin 19^\circ}{16} = \frac{\sin 40^\circ}{x} \quad \textit{DEGREE MODE!}$$

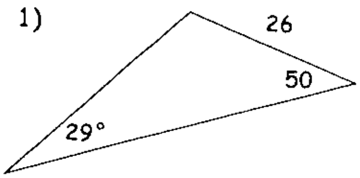
$$\frac{.326}{16} = \frac{.643}{x}$$

$$.326x = 10.288$$
$$x = 31.56 \text{ cm}$$

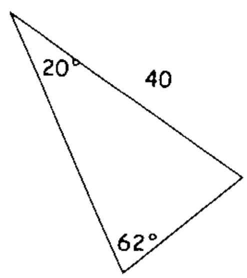


Solve each triangle: (All sides and all angles)

1)



2)



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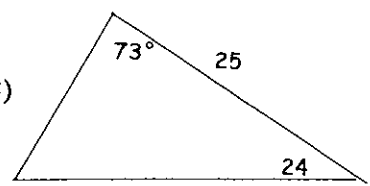

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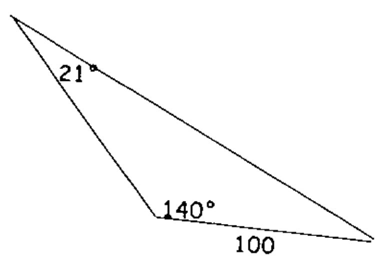
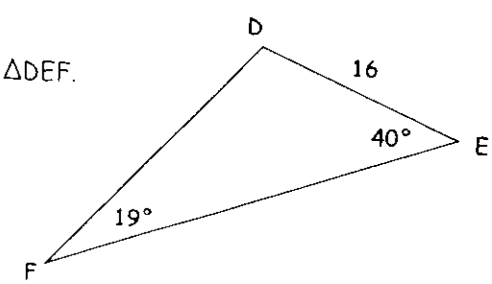


5) Find the perimeter of ΔDEF.



April 22: Trigonometry

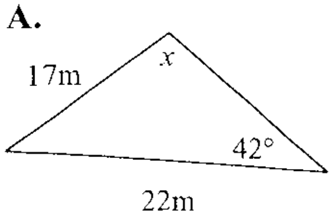
Name____________________

Make sure degree mode

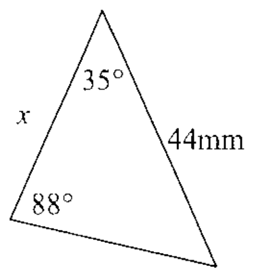
LAW OF SINES PRACTICE

1. Solve for the unknown in each triangle. Round to the nearest tenth.

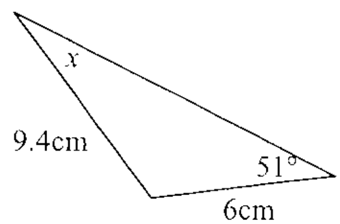
A.



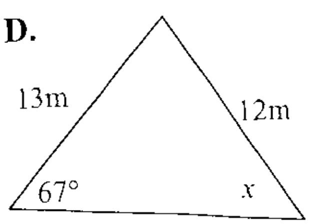
B.



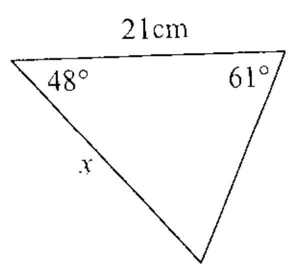
C.



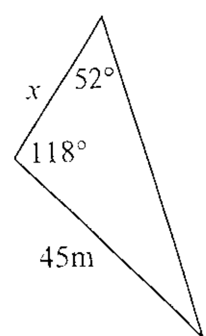
D.



E.



F.



April 23: Trigonometry

Name_______________

The LAW OF SINES can also be used to find missing angles.

Example: Find the missing angle x:

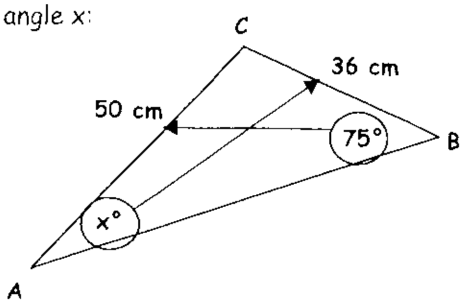
$$\frac{\sin x^{o}}{36} = \frac{\sin 75^{o}}{50}$$

$$\frac{\sin x^{o}}{36} = \frac{.966}{50}$$

$$50(\sin x^{o}) = 34.776$$

$$\sin x^{o} = .69532$$

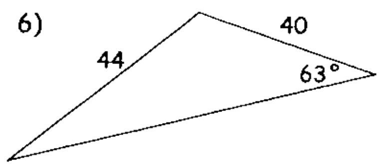
$x = 44^{o}$ (using inverse sine on your calculator)



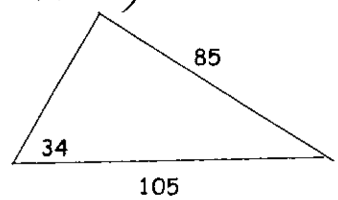
What about the other unknowns?

Solve each triangle: (Find all angles and all sides)

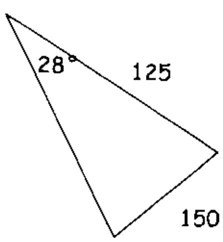
6)



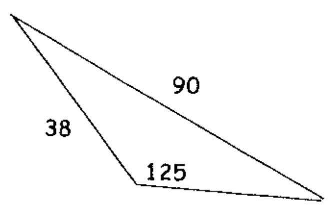
7)



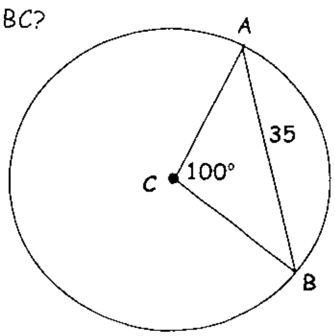
8)



9)



10) Find the area of circle C by using the Law of Sines to find the radius. **Hint:** What kind of triangle is ABC?



*Another hint:
CA = CB

April 24: Trigonometry

Name__________________

Inverse Trigonometric Ratios

A) Find the value of each inverse trigonometric ratio in degrees.

1) $\sin^{-1}(1)$ ____________

2) $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$ ____________

3) $\cos^{-1}(1)$ ____________

4) $\cot^{-1}\left(\frac{\sqrt{3}}{3}\right)$ ____________

5) $\sec^{-1}(\sqrt{2})$ ____________

6) $\csc^{-1}(2)$ ____________

B) Find the exact value of each inverse trigonometric ratio in radians.

7) $\csc^{-1}\left(\frac{2\sqrt{3}}{3}\right)$ ____________

8) $\tan^{-1}(1)$ ____________

9) $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$ ____________

10) $\sec^{-1}(1)$ ____________

11) $\sin^{-1}\left(\frac{1}{2}\right)$ ____________

12) $\cot^{-1}(0)$ ____________

April 27: Trigonometry

Name________________

Convert the following degree measures into radians

1) 45°	2) 76°	3) 510°	4) -240°	5) 0°
6) 150°	7) 40°	8) 270°	9) 120°	10) 10°
11) 50°	12) -30°	13) 6°	14) 300°	15) -24°

April 28: Trigonometry

Name__________________

Convert the following radian measures into degrees

16) $\frac{7\pi}{3}$

17) $\frac{\pi}{6}$

18) $\frac{\pi}{18}$

19) $\frac{3\pi}{4}$

20) $-\frac{13\pi}{4}$

21) π

22) $\frac{7\pi}{4}$

23) $-\frac{17\pi}{4}$

24) 2π

25) $\frac{\pi}{3}$

26) $\frac{2\pi}{3}$

27) $-\frac{\pi}{4}$

28) 0

29) $\frac{5\pi}{4}$

30) 3π

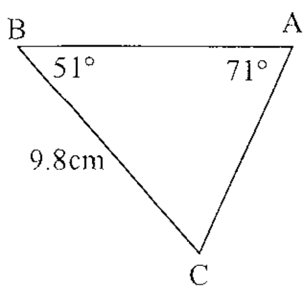
April 29: Trigonometry

Name__________________

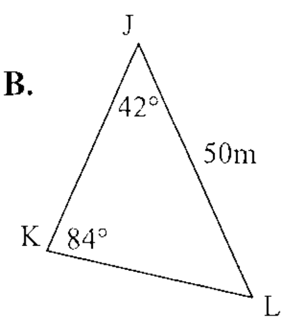
Law of sines.
Make sure degree mode.

2. Solve for **all** missing sides and angles in each triangle. Round to the nearest tenth.

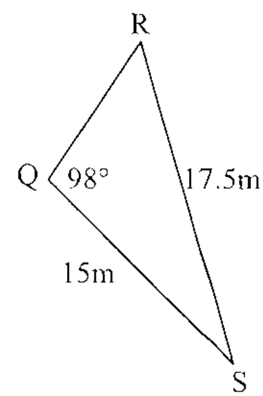
A.



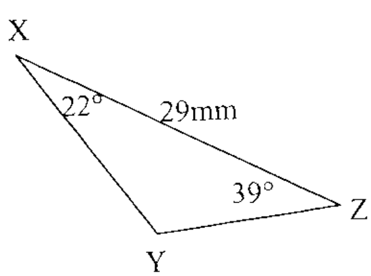
B.



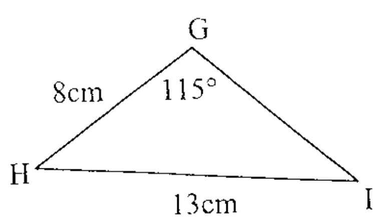
C.



D.



E.



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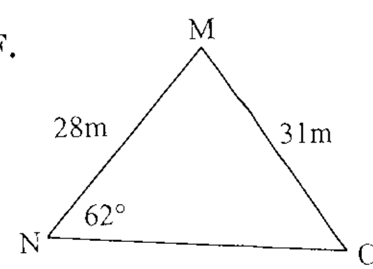
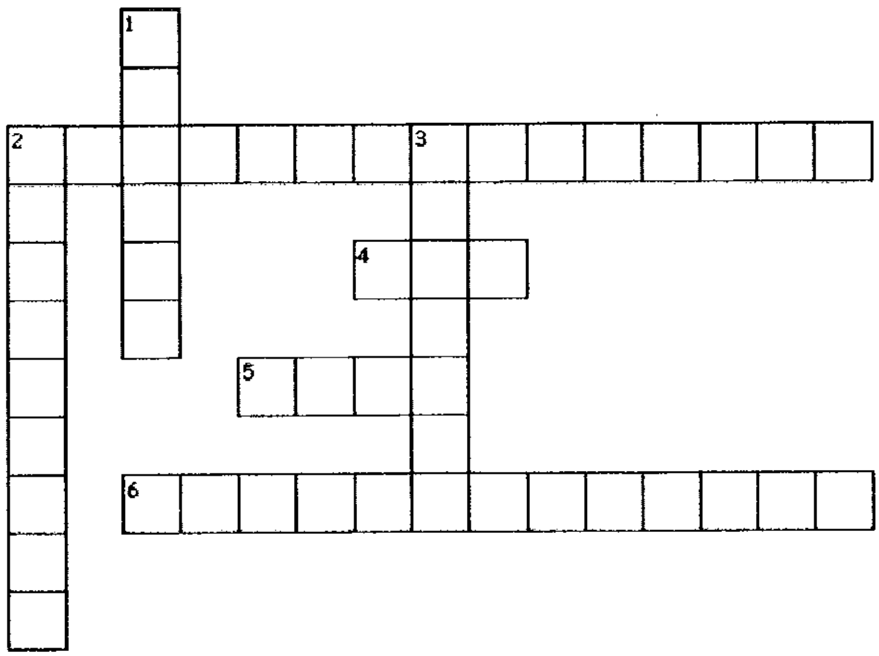


April 30: Trigonometry

Name________________



Across

2. what does cot squared + one equal?
4. what does sin squared + cos squared equal?
5. what does 1 over csc equal?
6. what does tan squared + one equal?

Down

1. what does 1 over sec equal?
2. what does sec over csc equal?
3. what does sin over cos equal?

May 1: Trigonometry

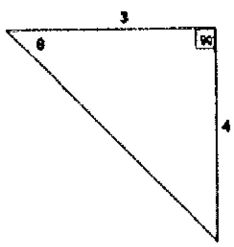
Name__________________

Hint: Find the missing side first.

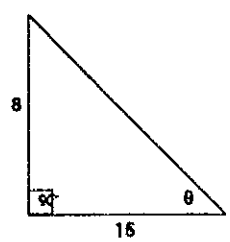
sin csc
cos sec
tan cot

Find the value of the six trigonometric functions

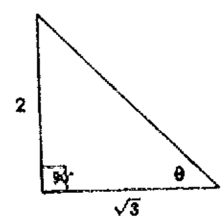
1)



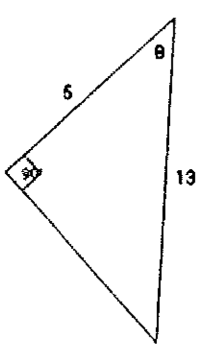
2)



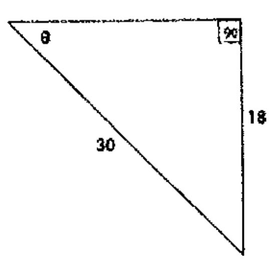
3)



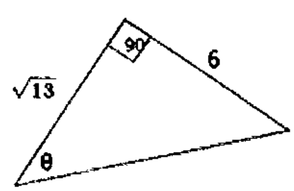
4)



5)



6)



May 4: Trigonometry

Name________________

Use the definition of the trig ratios to find the trig function indicated

7) Given: $\cos\theta = \frac{4}{5}$, find $\tan\theta$

8) Given: $\csc\theta = \frac{25}{7}$, find $\sec\theta$

9) Given: $\sin\theta = \frac{2}{3}$, $and \cos\theta = \frac{\sqrt{5}}{3}$, find $\cot\theta$

10) Given: $\cos\theta = \frac{\sqrt{3}}{2}$, find $\tan\theta$

May 5: Trigonometry

Name________________

Use the Unit Circle to find the values of the trig functions

11) $\cos 45°$ 12) $\sin 30°$ 13) $\sin \frac{3\pi}{4}$ 14) $\tan \frac{7\pi}{6}$

15) $\sec(-90°)$ 16) $\cot(-45°)$ 17) $\csc 150°$ 18) $\sin 270°$

19) $\cos \frac{5\pi}{4}$ 20) $\tan \frac{11\pi}{6}$

Use the special triangles (30-60-90 and 45-45-90) to find the values of the trig functions

21) $\cos 30°$ 22) $\sin 60°$ 23) $\csc 45°$ 24) $\cot 45°$

25) $\sin 30°$ 26) $\sec 45°$ 27) $\tan 60°$ 28) $\cos 45°$

May 6: Trigonometry

Name________________

Sum and difference formulas for sines and cosines

$$\sin(\alpha + \beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$$

$$\sin(\alpha - \beta) = \sin\alpha\cos\beta - \cos\alpha\sin\beta$$

$$\cos(\alpha + \beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$$

$$\cos(\alpha - \beta) = \cos\alpha\cos\beta + \sin\alpha\sin\beta$$

Use sum and difference formulas to find exact values

13) $\tan\frac{5\pi}{12}$ 14) $\cos 15°$ 15) $\sin 75°$ 16) $\cos(105°)$ 17) $\sin\frac{7\pi}{12}$

May 7: Trigonometry

Name__________________

Verify the identity

7) $\tan\theta \cdot \sin\theta \cdot \cos\theta = \sin^2\theta$

8) $\frac{\tan\theta}{\sec\theta} = \sin\theta$

10) $\frac{\cot\theta}{\csc\theta} = \cos\theta$

11) $\sec\theta\sin\theta = \tan\theta$

May 8: Trigonometry

Name________________

Sum to Product Formulas

$$\sin A + \sin B = 2\sin\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$$

$$\sin A - \sin B = 2\cos\left(\frac{A+B}{2}\right)\sin\left(\frac{A-B}{2}\right)$$

$$\cos A + \cos B = 2\cos\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$$

$$\cos A - \cos B = -2\sin\left(\frac{A+B}{2}\right)\sin\left(\frac{A-B}{2}\right)$$

Use the sum-to-product formula to change $\sin 70° - \sin 30°$ into a product

$\sin 70° - \sin 30° =$

Use the given information to find the exact value

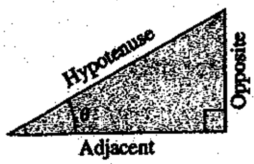
5) $\sin\theta = \frac{1}{2}$, $\cos\theta = \frac{\sqrt{3}}{2}$, where θ is in quadrant 1. Find $\tan\theta$

---

6) $\tan\theta = -\frac{4}{5}$, where θ is in quadrant 4. Find $\sec\theta$

Definition of the Six Trigonometric Functions

Right triangle definitions, where $0 < \theta < \pi/2$.

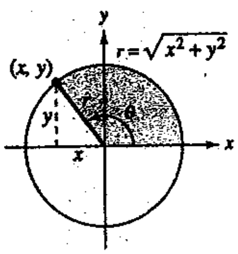


$$\sin\theta = \frac{\text{opp}}{\text{hyp}} \qquad \csc\theta = \frac{\text{hyp}}{\text{opp}}$$

$$\cos\theta = \frac{\text{adj}}{\text{hyp}} \qquad \sec\theta = \frac{\text{hyp}}{\text{adj}}$$

$$\tan\theta = \frac{\text{opp}}{\text{adj}} \qquad \cot\theta = \frac{\text{adj}}{\text{opp}}$$

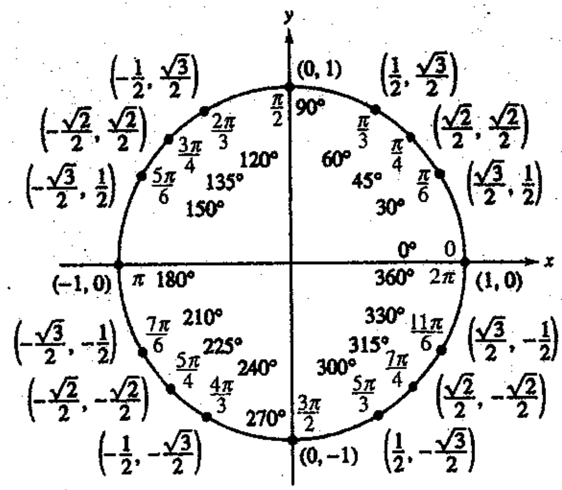
Circular function definitions, where θ *is any angle.*



$$\sin\theta = \frac{y}{r} \qquad \csc\theta = \frac{r}{y}$$

$$\cos\theta = \frac{x}{r} \qquad \sec\theta = \frac{r}{x}$$

$$\tan\theta = \frac{y}{x} \qquad \cot\theta = \frac{x}{y}$$



Reciprocal Identities

$$\sin x = \frac{1}{\csc x} \qquad \sec x = \frac{1}{\cos x} \qquad \tan x = \frac{1}{\cot x}$$

$$\csc x = \frac{1}{\sin x} \qquad \cos x = \frac{1}{\sec x} \qquad \cot x = \frac{1}{\tan x}$$

Quotient Identities

$$\tan x = \frac{\sin x}{\cos x} \qquad \cot x = \frac{\cos x}{\sin x}$$

Pythagorean Identities

$$\sin^2 x + \cos^2 x = 1$$

$$1 + \tan^2 x = \sec^2 x \qquad 1 + \cot^2 x = \csc^2 x$$

Cofunction Identities

$$\sin\left(\frac{\pi}{2} - x\right) = \cos x \qquad \cos\left(\frac{\pi}{2} - x\right) = \sin x$$

$$\csc\left(\frac{\pi}{2} - x\right) = \sec x \qquad \tan\left(\frac{\pi}{2} - x\right) = \cot x$$

$$\sec\left(\frac{\pi}{2} - x\right) = \csc x \qquad \cot\left(\frac{\pi}{2} - x\right) = \tan x$$

Even/Odd Identities

$$\sin(-x) = -\sin x \qquad \cos(-x) = \cos x$$

$$\csc(-x) = -\csc x \qquad \tan(-x) = -\tan x$$

$$\sec(-x) = \sec x \qquad \cot(-x) = -\cot x$$

Sum and Difference Formulas

$$\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$$

$$\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$$

$$\tan(u \pm v) = \frac{\tan u \pm \tan v}{1 \mp \tan u \tan v}$$

Double-Angle Formulas

$$\sin 2u = 2 \sin u \cos u$$

$$\cos 2u = \cos^2 u - \sin^2 u = 2\cos^2 u - 1 = 1 - 2\sin^2 u$$

$$\tan 2u = \frac{2\tan u}{1 - \tan^2 u}$$

Power-Reducing Formulas

$$\sin^2 u = \frac{1 - \cos 2u}{2}$$

$$\cos^2 u = \frac{1 + \cos 2u}{2}$$

$$\tan^2 u = \frac{1 - \cos 2u}{1 + \cos 2u}$$

Sum-to-Product Formulas

$$\sin u + \sin v = 2 \sin\left(\frac{u+v}{2}\right)\cos\left(\frac{u-v}{2}\right)$$

$$\sin u - \sin v = 2 \cos\left(\frac{u+v}{2}\right)\sin\left(\frac{u-v}{2}\right)$$

$$\cos u + \cos v = 2 \cos\left(\frac{u+v}{2}\right)\cos\left(\frac{u-v}{2}\right)$$

$$\cos u - \cos v = -2 \sin\left(\frac{u+v}{2}\right)\sin\left(\frac{u-v}{2}\right)$$

Product-to-Sum Formulas

$$\sin u \sin v = \frac{1}{2}[\cos(u - v) - \cos(u + v)]$$

$$\cos u \cos v = \frac{1}{2}[\cos(u - v) + \cos(u + v)]$$

$$\sin u \cos v = \frac{1}{2}[\sin(u + v) + \sin(u - v)]$$

$$\cos u \sin v = \frac{1}{2}[\sin(u + v) - \sin(u - v)]$$

Section 4.7 Formulas

Law of sines

Solve triangles that do not contain a 90° angle

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Law of cosines

Solve triangles that do not contain a 90° angle

$a^2 = b^2 + c^2 - 2\cdot b\cdot c\cdot \cos A$

$b^2 = a^2 + c^2 - 2\cdot a\cdot c\cdot \cos B$

$c^2 = a^2 + b^2 - 2\cdot a\cdot b\cdot \cos C$

Heron's formula

Area of any triangle $= \sqrt{s(s-a)(s-b)(s-c)}$

Where $s = \frac{1}{2}(a+b+c)$

Area of any triangle

$= \frac{1}{2}\cdot b\cdot c\cdot \sin A$

$= \frac{1}{2}\cdot a\cdot b\cdot \sin C$

$= \frac{1}{2}\cdot a\cdot c\cdot \sin B$

$$= \frac{a^2\cdot \sin B\cdot \sin C}{2\cdot \sin A}$$

$$= \frac{c^2\cdot \sin A\cdot \sin B}{2\cdot \sin C}$$

$$= \frac{b^2\cdot \sin A\cdot \sin C}{2\cdot \sin B}$$

	a θ	Values of the trigonometric functions					
degree	in radians	sin(θ)	cos(θ)	tan(θ)	cot(θ)	sec(θ)	csc(θ)
0°	0	0 Show Hide	1 Show Hide	0 Show Hide	undef. Show Hide	1 Show Hide	undef. Show Hide
30°	$\frac{\pi}{6}$	$\frac{1}{2}$ Show Hide	$\frac{\sqrt{3}}{2}$ Show Hide	$\frac{\sqrt{3}}{3}$ Show Hide	$\sqrt{3}$ Show Hide	$\frac{2\sqrt{3}}{3}$ Show Hide	2 Show Hide
45°	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$ Show Hide	$\frac{\sqrt{2}}{2}$ Show Hide	1 Show Hide	1 Show Hide	$\sqrt{2}$ Show Hide	$\sqrt{2}$ Show Hide
60°	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$ Show Hide	$\frac{1}{2}$ Show Hide	$\sqrt{3}$ Show Hide	$\frac{\sqrt{3}}{3}$ Show Hide	2 Show Hide	$\frac{2\sqrt{3}}{3}$ Show Hide
90°	$\frac{\pi}{2}$	1 Show Hide	0 Show Hide	undef. Show Hide	0 Show Hide	undef. Show Hide	1 Show Hide
120°	$\frac{2\pi}{3}$	$\frac{\sqrt{3}}{2}$ Show Hide	$-\frac{1}{2}$ Show Hide	$-\sqrt{3}$ Show Hide	$-\frac{\sqrt{3}}{3}$ Show Hide	-2 Show Hide	$\frac{2\sqrt{3}}{3}$ Show Hide
135°	$\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$ Show Hide	$-\frac{\sqrt{2}}{2}$ Show Hide	-1 Show Hide	-1 Show Hide	$-\sqrt{2}$ Show Hide	$\sqrt{2}$ Show Hide
150°	$\frac{5\pi}{6}$	$\frac{1}{2}$ Show Hide	$-\frac{\sqrt{3}}{2}$ Show Hide	$-\frac{\sqrt{3}}{3}$ Show Hide	$-\sqrt{3}$ Show Hide	$-\frac{2\sqrt{3}}{3}$ Show Hide	2 Show Hide
180°	π	0 Show Hide	-1 Show Hide	0 Show Hide	undef. Show Hide	-1 Show Hide	undef. Show Hide
210°	$\frac{7\pi}{6}$	$-\frac{1}{2}$ Show Hide	$-\frac{\sqrt{3}}{2}$ Show Hide	$\frac{\sqrt{3}}{3}$ Show Hide	$\sqrt{3}$ Show Hide	$-\frac{2\sqrt{3}}{3}$ Show Hide	-2 Show Hide
225°	$\frac{5\pi}{4}$	$-\frac{\sqrt{2}}{2}$ Show Hide	$-\frac{\sqrt{2}}{2}$ Show Hide	1 Show Hide	1 Show Hide	$-\sqrt{2}$ Show Hide	$-\sqrt{2}$ Show Hide
240°	$\frac{4\pi}{3}$	$-\frac{\sqrt{3}}{2}$ Show Hide	$-\frac{1}{2}$ Show Hide	$\sqrt{3}$ Show Hide	$\frac{\sqrt{3}}{3}$ Show Hide	-2 Show Hide	$-\frac{2\sqrt{3}}{3}$ Show Hide
270°	$\frac{3\pi}{2}$	-1 Show Hide	0 Show Hide	undef. Show Hide	0 Show Hide	undef. Show Hide	-1 Show Hide
300°	$\frac{5\pi}{3}$	$-\frac{\sqrt{3}}{2}$ Show Hide	$\frac{1}{2}$ Show Hide	$-\sqrt{3}$ Show Hide	$-\frac{\sqrt{3}}{3}$ Show Hide	2 Show Hide	$-\frac{2\sqrt{3}}{3}$ Show Hide
315°	$\frac{7\pi}{4}$	$-\frac{\sqrt{2}}{2}$ Show Hide	$\frac{\sqrt{2}}{2}$ Show Hide	-1 Show Hide	-1 Show Hide	$\sqrt{2}$ Show Hide	$-\sqrt{2}$ Show Hide
330°	$\frac{11\pi}{6}$	$-\frac{1}{2}$ Show Hide	$\frac{\sqrt{3}}{2}$ Show Hide	$-\frac{\sqrt{3}}{3}$ Show Hide	$-\sqrt{3}$ Show Hide	$\frac{2\sqrt{3}}{3}$ Show Hide	-2 Show Hide
360°	2π	0	1	0	undef.	1	undef.