Name Trigonometric Functions | 6.8

Ready, Set, Go!

Ready

Topic: Reducing complex fractions

Write each of the following as a simple fraction.
Rationalize the denominators when appropriate.

1. $\dfrac{\frac{\sqrt{2}}{1}}{\frac{\sqrt{2}}{2}}$ 2. $\dfrac{\frac{8\sqrt{3}}{5}}{\frac{1}{5}}$ 3. $\dfrac{8}{\frac{1}{2}}$

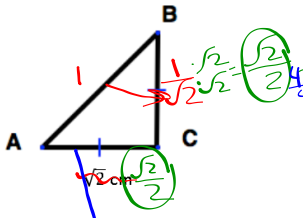
4. $\dfrac{\frac{7\sqrt{3}}{2}}{\frac{1}{2}}$ 5. $\dfrac{1}{\sqrt{2}}$ 6. $\dfrac{3}{\sqrt{3}}$ 7. $\dfrac{4}{\sqrt{8}}$ 8. $\dfrac{\frac{2}{3}}{\frac{1}{2}}$ 9. $\dfrac{\frac{2}{\sqrt{7}}}{\frac{5}{\sqrt{7}}}$

Set

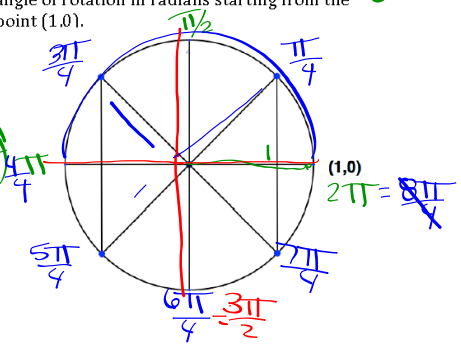
Topic: Radian measure of an angle

Set Topic: Radian measure of an angle

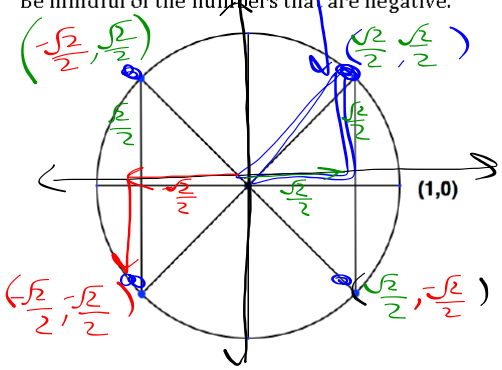
10. Triangle ABC is an isosceles right triangle. The length of one side is given. Fill in the values for the missing sides and angles A and B.



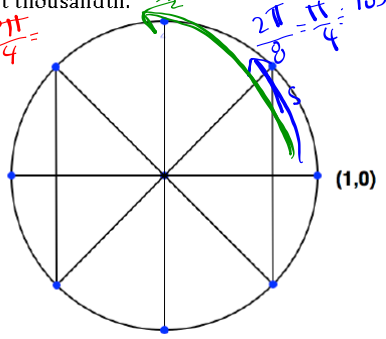
11. Label each point around the circle with the angle of rotation in radians starting from the point (1,0).



12. Use the values in #10 to write the **exact** coordinates of the 4 points on the circle below. Be mindful of the numbers that are negative.



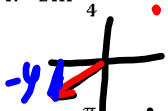
13. Find the arc length, s, from the point (1,0) to each point around the circle. Record your answers as decimal approximations to the nearest thousandth.



RADIAN

Use your calculator to find the following values.

14. $\sin\frac{5\pi}{4}$ = -.707



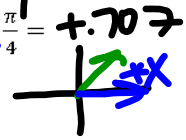
15. $\sin\frac{7\pi}{4}$ = -.707

16. Why are both of your answers negative?

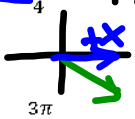
(cos x, sin y)

the 'y-values' are neg. they go down

17. $\cos\frac{\pi}{4}$ = +.707



18. $\cos\frac{7\pi}{4}$ = +.707



19. Why are both of your answers positive?

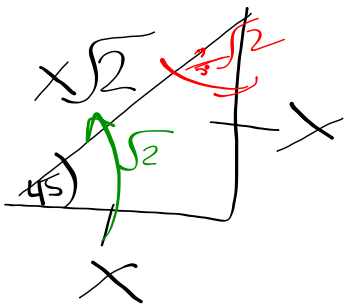
the x-values are pos. they go to the right.

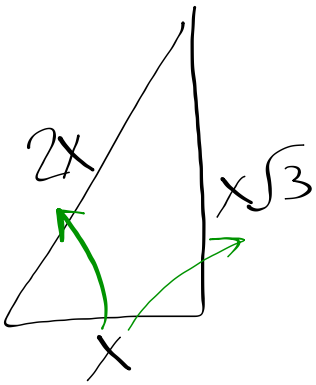
20. $\sin\frac{3\pi}{4}$ =

21. $\cos\frac{3\pi}{4}$ =

22. Why is one answer positive and one answer negative?

Special Δ's



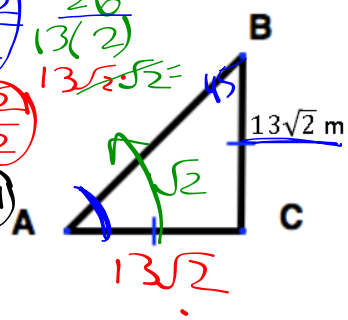


Go Topic: Trigonometric values in the special triangles

Warm-Up: Special Triangles 6.8 GO

Angle C is the right angle in each of the triangles below. **Use the given information to find the missing sides and the missing angles. Then find the indicted trig values.** Rationalize denominators when appropriate. Do NOT change the values to decimals. Square roots are **exact** values. Decimal representations of the square roots are approximations.

23.

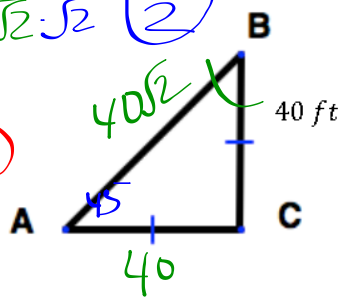


$\sin A =$

$\cos A =$

$\tan A =$

24.



$\sin B =$

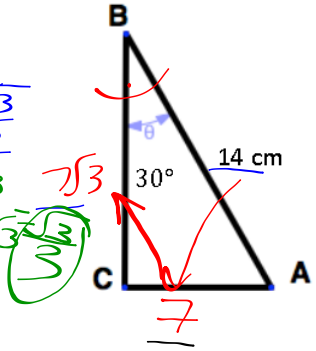
$\cos B =$

$\tan B =$

25. Explain why the trig values were the same for angle A and angle B even though the dimensions of the triangles were different.

similar Δ's will have constant ratios.

26.

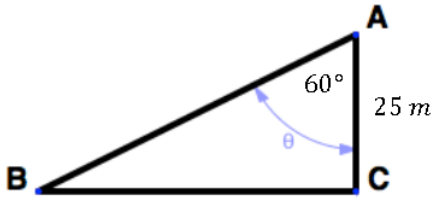


$\sin B =$

$\cos B =$

$\tan B =$

27.

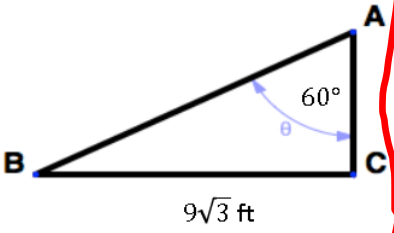


$\sin A =$

$\cos A =$

$\tan A =$

28.

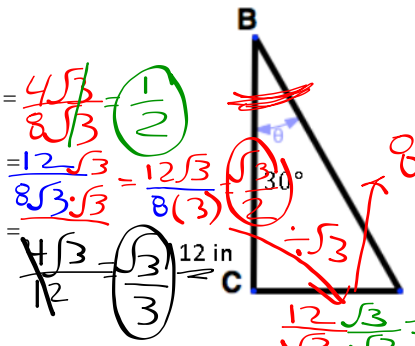


$\sin A =$

$\cos A =$

$\tan A =$

29.



$\sin B =$

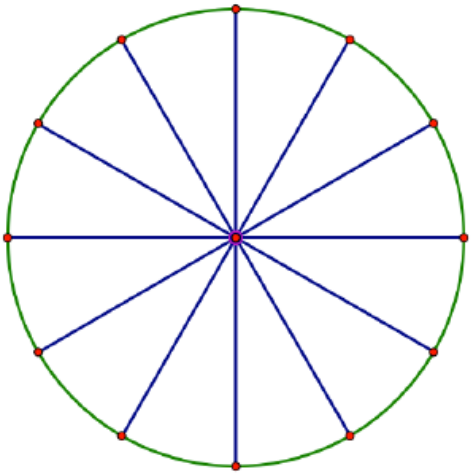
$\cos B =$

$\tan B =$

30. Explain where you see the meaning of the identity $\sin\theta = \cos(90° - \theta)$ in problems 26, 27, 28, and 29.

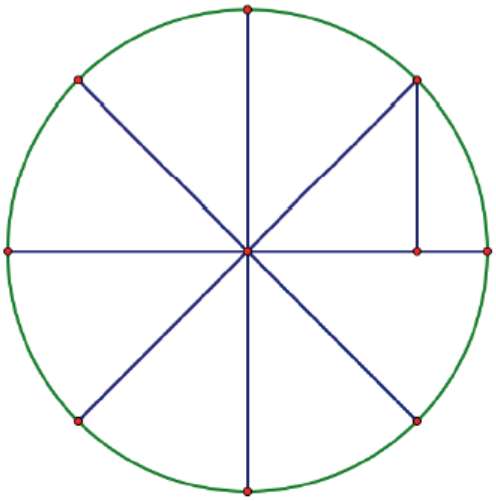
$\sin 30 = \cos 60$

$\frac{1}{2} = \frac{1}{2}$ ✓



Use the diagram above to give exact values for the following trigonometric expressions.

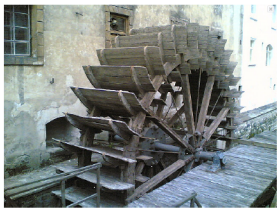
1. $\sin\left(\frac{\pi}{6}\right) =$
2. $\sin\left(\frac{5\pi}{6}\right) =$
3. $\cos\left(\frac{7\pi}{6}\right) =$
4. $\sin\left(\frac{\pi}{3}\right) =$
5. $\cos\left(\frac{\pi}{6}\right) =$
6. $\cos\left(\frac{11\pi}{6}\right) =$
7. $\sin\left(\frac{3\pi}{2}\right) =$
8. $\cos(\pi)$
9. $\sin\left(\frac{7\pi}{3}\right) =$



Use the diagram above to give exact values for the following trigonometric expressions.

1. $\sin\left(\frac{\pi}{4}\right) =$
2. $\sin\left(\frac{5\pi}{4}\right) =$
3. $\cos\left(\frac{3\pi}{4}\right) =$
4. $\cos\left(\frac{\pi}{4}\right) =$
5. $\cos\left(-\frac{\pi}{4}\right) =$
6. $\sin\left(\frac{7\pi}{4}\right) =$
7. $\sin\left(\frac{3\pi}{2}\right) =$
8. $\cos\left(\frac{3\pi}{2}\right)$
9. $\sin\left(\frac{11\pi}{4}\right) =$

Name Trigonometric Functions | 6.9

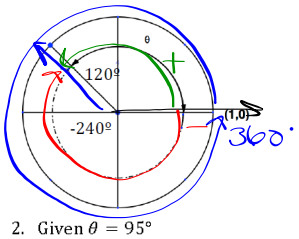


Ready, Set, Go!

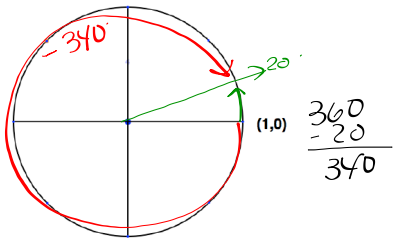
Ready Topic: Coterminal angles

State a negative angle of rotation that is *coterminal* with the given angle of rotation. (*Coterminal* angles share the same terminal side of an angle of rotation.) Sketch and label both angles.

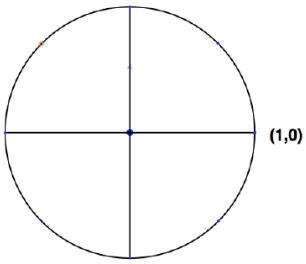
Example: $\theta = 120°$ is the given angle of rotation. The angle of rotation is indicated by the solid arc. The dotted angle of rotation is the coterminal angle with a rotation of $-240°$.



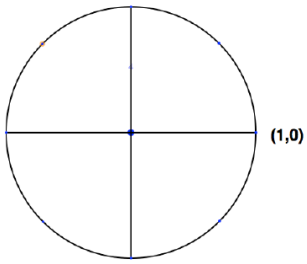
1. Given $\theta = 20°$
Coterminal angle $-340°$



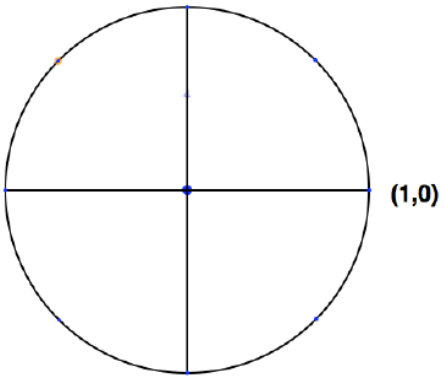
2. Given $\theta = 95°$
Coterminal angle _____



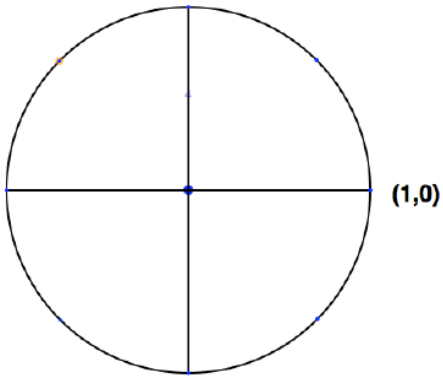
3. Given $\theta = 225°$
Coterminal angle _____



4. Given $\theta = 270°$
coterminal angle _____



5. Given $\theta = 300°$
coterminal angle _____



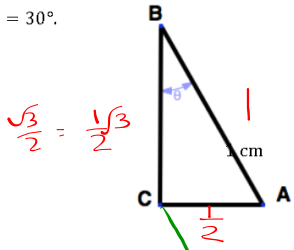
6. What is the sum of a positive angle of rotation and its negative coterminal angle?

7. Every angle has an infinite number of coterminal angles both positive and negative if the definition is extended to angles of rotation greater than 360°. For example: an angle of 45° is coterminal with angles of rotation measuring 405°, 765° *etc.* Given $\theta = 115°$, name 3 **positive** coterminal angles.

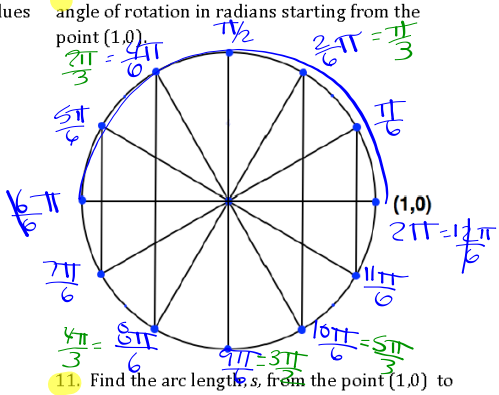
Set Topic: Sine and cosine of radian measures

8. Triangle ABC is a 30°, 60°, 90° right triangle. The length of one side is given. Fill in the values for the missing sides.

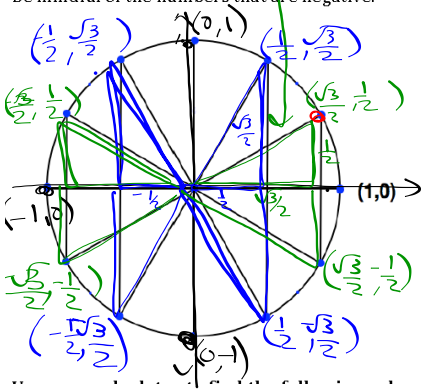
$m\angle B = 30°$.



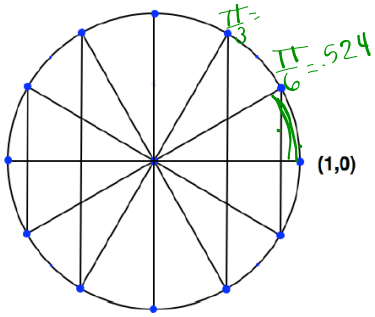
9. Label each point around the circle with the angle of rotation in radians starting from the point (1,0).



10. Use the values in #8 to write the **exact** coordinates of the points on the circle below. Be mindful of the numbers that are negative.



11. Find the arc length, s, from the point (1,0) to each point around the circle. Record your answers as decimal approximations to the nearest thousandth.



Use your calculator to find the following values.

12. $\sin\frac{5\pi}{6} =$

15. $\sin\frac{\pi}{3} =$

13. Why are both of your answers positive?

14. $\cos\frac{2\pi}{3} =$

18. $\cos\frac{4\pi}{3} =$

15. Why are both of your answers negative?

20. $\sin\frac{\pi}{2} =$

21. $\cos\frac{\pi}{2} =$

22. In which quadrants are sine and cosine both negative?

23. Name an angle of rotation where sine is equal to -1.

24. Name an angle of rotation where cosine is equal to -1.

Go

Topic: Inverse trig functions

Inside angle = Inverse

Use your calculator to find the value of θ *where* $0 \leq \theta \leq 90°$. Round your answers to the nearest degree. (calculator)

25. $\sin\theta = 0.82$ 26. $\cos\theta = 0.31$ 27. $\cos\theta = 0.98$

$\sin^{-1}(.82) = 55°$

28. $\sin\theta = 0.39$ 29. $\sin\theta = 1$ 30. $\cos\theta = 0.71$

Side note:

When you are looking for the correct angle, as you are in these problems, there are two notations that can indicate the same thing.

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

This problem is the *inverse sine function.* It is asking for the angle that would make the equation true. Your answer would be 30º in right angle trigonometry. In circular trig it would be $30°$ *and* $150°$ because both values make it true. (There are many more correct answers in circular trig if the domain is not restricted. Let's keep it restricted to $0 \leq \theta \leq 90°$.)

same

$\arcsin\frac{1}{2} =$

This notation is also asking for the angle that would make the equation true.