



Name _____

Period _____

Date _____

READY

Topic: Reducing complex fractions

Explain algebraically why the following pairs of expressions are equivalent.

1. $\sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{2}$

$\frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{\sqrt{2^2}} = \frac{\sqrt{3}}{2}$

2. $\sqrt{\frac{1}{2}} = \frac{\sqrt{2}}{2}$

Hint: Think of multiplying the left side

by 1 in the form of $\sqrt{\frac{2}{2}}$

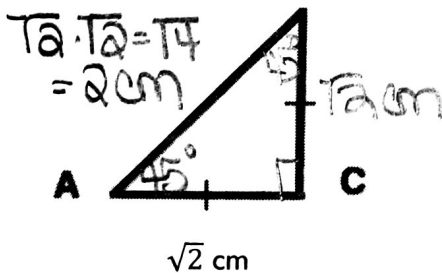
$\frac{\sqrt{1}}{\sqrt{2}} = \frac{\sqrt{1}}{\sqrt{2}} = \frac{1}{\sqrt{2}}$ → Can't leave radical in denominator
 ∴ mult. both numer. & denom. by $\sqrt{2}$
 $\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{\sqrt{2}}{2}$ ← (remember $\frac{\sqrt{2}}{\sqrt{2}} = 1$)

SET

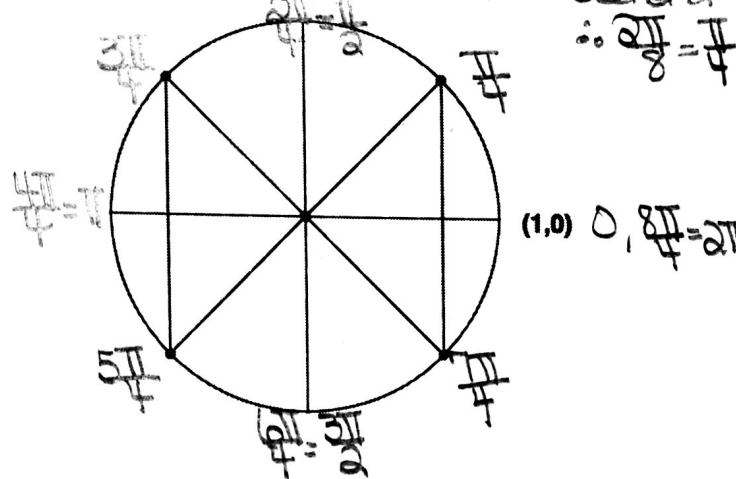
Topic: Finding sine of an angle in radian measure

3. 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.

B. $45^\circ - 45^\circ - 90^\circ$
 hypotenuse = $\sqrt{2} \cdot \text{leg}$



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

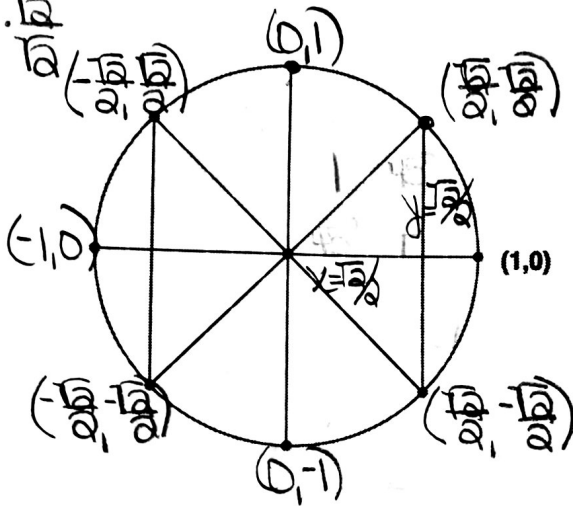


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#3 but with hyp=1

$hyp = \sqrt{leg \cdot leg}$
 $leg = \frac{hyp}{\sqrt{2}}$
 $\frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
 $= \frac{\sqrt{2}}{2}$

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.



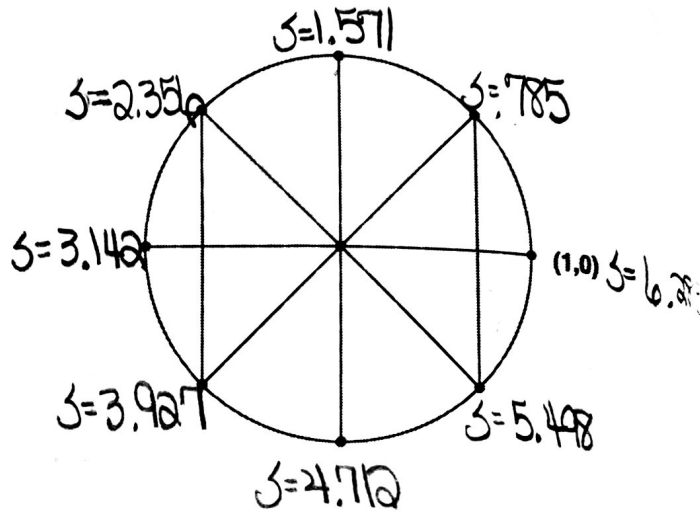
Use your calculator to find the following values.

7. $\sin \frac{5\pi}{4} = -.707$ 8. $\sin \frac{7\pi}{4} = .707$

10. $\cos \frac{\pi}{4} = .707$ 11. $\cos \frac{7\pi}{4} = .707$

13. $\sin \frac{3\pi}{4} = .707$ 14. $\cos \frac{3\pi}{4} = -.707$

6. 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.



9. Why are both of your answers negative?

These \angle 's are in quadrants III & IV. y is negative in quadrants III & IV.

12. Why are both of your answers positive?

These \angle 's are in quadrants I & IV. x is positive in quadrants I & IV.

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

The \angle is in quadrant II. x is negative & y is positive in quadrant II.

45°-45°-90°: legs are congruent, hypotenuse = $\sqrt{2}$ · leg
 30°-60°-90°: hypotenuse = 2 · short leg, long leg = $\sqrt{3}$ · short leg

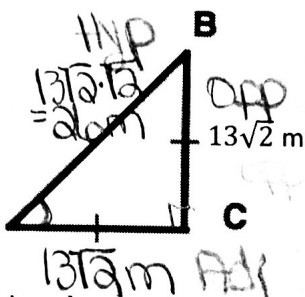
GO

Topic: Recalling trigonometric values of special triangles

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 indicated 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.

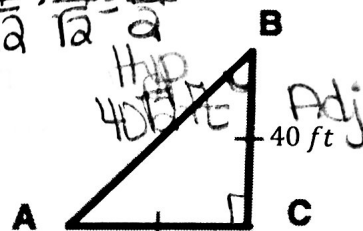
16.

same →
 $\sin A = \frac{13\sqrt{2}}{26} = \frac{\sqrt{2}}{2}$
 $\cos A = \frac{13}{26} = \frac{1}{2}$
 $\tan A = \frac{13\sqrt{2}}{13} = \sqrt{2}$



17.

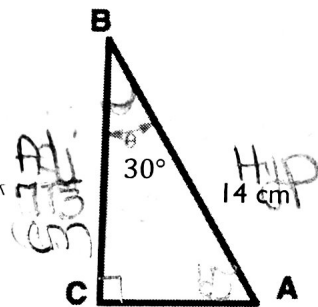
Rationalize
 same →
 $\sin B = \frac{40}{40\sqrt{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
 $\cos B = \frac{40}{40} = 1$
 $\tan B = \frac{40}{40} = 1$



18. Explain why the trig values were the same for angle A and angle B even though the dimensions of the triangles were different. All 45°-45°-90° triangles are similar (sides in same proportions)

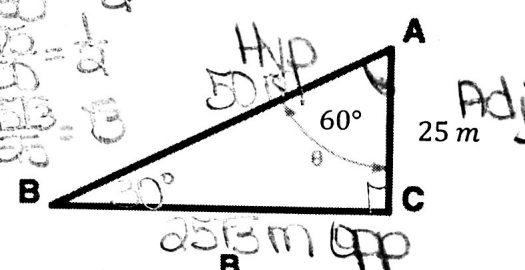
19.

$\sin B = \frac{7}{14} = \frac{1}{2}$
 $\cos B = \frac{7\sqrt{3}}{14} = \frac{\sqrt{3}}{2}$
 $\tan B = \frac{7}{7\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$



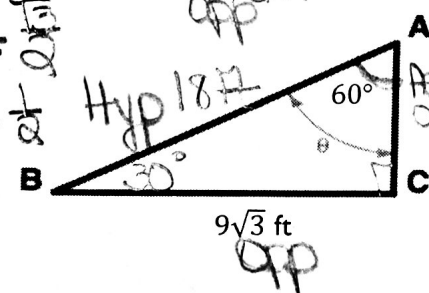
20.

$\sin A = \frac{50\sqrt{3}}{100} = \frac{\sqrt{3}}{2}$
 $\cos A = \frac{50}{100} = \frac{1}{2}$
 $\tan A = \frac{50\sqrt{3}}{50} = \sqrt{3}$



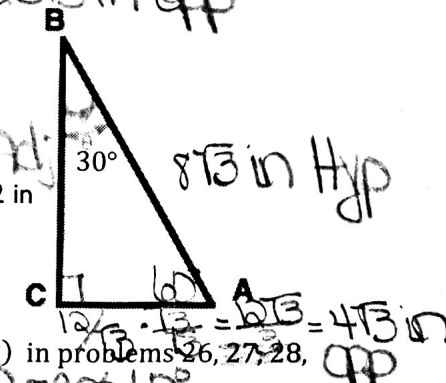
21.

$\sin A = \frac{9\sqrt{3}}{18} = \frac{\sqrt{3}}{2}$
 $\cos A = \frac{9}{18} = \frac{1}{2}$
 $\tan A = \frac{9\sqrt{3}}{9} = \sqrt{3}$



22.

$\sin B = \frac{4\sqrt{3}}{8\sqrt{3}} = \frac{1}{2}$
 $\cos B = \frac{12}{8\sqrt{3}} = \frac{3\sqrt{3}}{2}$
 $\tan B = \frac{4\sqrt{3}}{12} = \frac{\sqrt{3}}{3}$



23. Explain where you see the meaning of the identity $\sin \theta = \cos(90^\circ - \theta)$ in problems 26, 27, 28, and 29. # 19, 20, 21, 22
 $\sin 30^\circ = \cos(90^\circ - 30^\circ) = \cos 60^\circ$
 $\sin 60^\circ = \cos(90^\circ - 60^\circ) = \cos 30^\circ$

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