

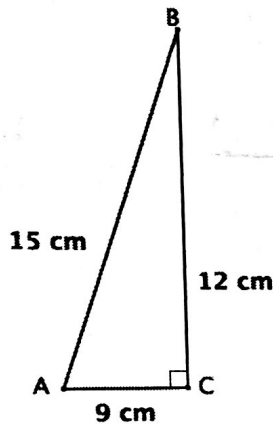
Name _____ Period _____ Date _____

READY

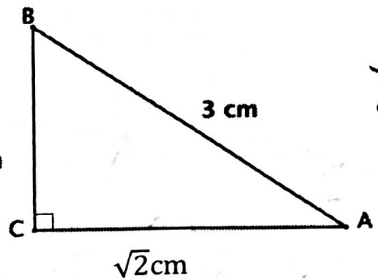
Topic: Recalling trigonometric functions

Use the given triangle to write the values of $\sin A$, $\cos A$, and $\tan A$ and $\sin B$, $\cos B$, and $\tan B$.

1.
 $\sin A = \frac{12}{15} = \frac{4}{5}$
 $\cos A = \frac{9}{15} = \frac{3}{5}$
 $\tan A = \frac{12}{9} = \frac{4}{3}$
 $\sin B = \frac{9}{15} = \frac{3}{5}$
 $\cos B = \frac{12}{15} = \frac{4}{5}$
 $\tan B = \frac{9}{12} = \frac{3}{4}$

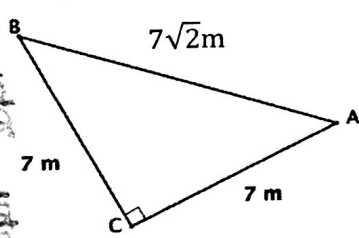


2.
 $\sin A = \frac{1}{3}$
 $\cos A = \frac{\sqrt{2}}{3}$
 $\tan A = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
 $\sin B = \frac{\sqrt{2}}{3}$
 $\cos B = \frac{1}{3}$
 $\tan B = \frac{\sqrt{2}}{1}$

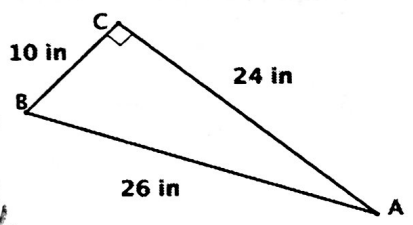


Rationalize

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



4.
 $\sin A = \frac{10}{26} = \frac{5}{13}$
 $\cos A = \frac{24}{26} = \frac{12}{13}$
 $\tan A = \frac{10}{24} = \frac{5}{12}$
 $\sin B = \frac{24}{26} = \frac{12}{13}$
 $\cos B = \frac{10}{26} = \frac{5}{13}$
 $\tan B = \frac{24}{10} = \frac{12}{5}$



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SET

Topic: Adding, subtracting, multiplying, and dividing rational functions

Errors

5. Angela simplified the following rational expressions. Only one of the three problems is correct. Determine which one she answered correctly. Then identify Angela's errors in the two that are incorrect and correct them.

a. $\frac{5x}{(x-3)} + \frac{2}{(x-1)}$

b. $\frac{x}{(x+3)} - \frac{4(x+3)}{(x-1)}$

c. $\frac{(x+1)(x-2)}{(x+2)} \times \frac{(x+5)}{(x-2)(x+2)}$

Common Denominator

$$\frac{5x(x-1)}{(x-3)(x-1)} + \frac{2(x-3)}{(x-3)(x-1)}$$

$$\frac{5x^2 - 5x + 2x - 6}{(x-3)(x-1)}$$

$$\frac{5x^2 - 3x - 6}{(x-3)(x-1)}$$

Common Denominator

$$\frac{x}{(x+3)} - \frac{4(x+3)}{(x-1)}$$

$$\frac{x(x-1)}{(x+3)(x-1)} - \frac{4(x+3)(x-1)}{(x-1)(x-1)}$$

$$\frac{x^2 - x - 4x^2 - 12x - 12}{(x-1)^2}$$

$$\frac{-3x^2 - 13x - 12}{(x-1)^2}$$

$$\frac{(x+1)(x-2)(x+5)}{(x+2)(x-2)(x+2)}$$

$$\frac{(x+1)(x+5)}{(x+2)(x+2)} \times \text{leave in factored form}$$

$$\frac{x^2 + 6x + 5}{x^2 + 4x + 4}$$

Simplify each expression. Reduce when possible.

6. $\frac{2x+6}{(x+1)} - \frac{4}{(x+1)}$

$$= \frac{2x+6-4}{x+1} = \frac{2x+2}{x+1} = \frac{2(x+1)}{x+1} = 2$$

7. $\frac{2x}{x+2} + \frac{x-1}{x-5}$

$$= \frac{2x(x-5) + (x-1)(x+2)}{(x+2)(x-5)}$$

$$= \frac{2x^2 - 10x + x^2 + x - 2}{(x+2)(x-5)} = \frac{3x^2 - 9x - 2}{(x+2)(x-5)}$$

8. $\frac{x^2+6x+8}{x^2-5x+4} \cdot \frac{x^2+3x-4}{x^2+4x+4}$

$$= \frac{(x+2)(x+4)(x+4)(x-1)}{(x-4)(x-1)(x+2)(x+2)} = \frac{(x+4)^2}{(x-4)(x+2)}$$

9. $\frac{4x+8}{5x-20} \div \frac{x^2-3x-10}{x^2-4x}$

$$= \frac{4(x+2)}{5(x-4)} \cdot \frac{x^2-4x}{x^2-3x-10}$$

$$= \frac{4(x+2) \cdot x(x-4)}{5(x-4)(x-5)(x+2)} = \frac{4x}{5(x-5)}$$

10H. $\frac{2x}{(x^2-4)} + \frac{4}{(x+2)}$

$$= \frac{2x}{(x+2)(x-2)} + \frac{4(x-2)}{(x+2)(x-2)}$$

$$= \frac{2x + 4x - 8}{(x+2)(x-2)} = \frac{6x-8}{(x+2)(x-2)}$$

11H. $\frac{x-10}{x-4} - \frac{x+2}{x-4}$

$$= \frac{x-10}{x-4} + \frac{x+2}{x-4}$$

$$= \frac{x-10+x+2}{x-4} = \frac{2x-8}{x-4}$$

$$= \frac{2(x-4)}{x-4} = 2$$

Topic: Comparing rational numbers and rational expressions

12. Rational numbers and rational expressions are comparable because they have similar features. Complete the table below by writing the comparable situation for each statement written.

| Rational Numbers | Rational Expressions |
|--|--|
| Whole numbers are rational numbers with a denominator of one. | a) Polynomials are rational expressions with a denominator of 1 |
| b) Rational numbers (of the form $\frac{a}{b}$) are undefined when the denominator is equal to 0 | Rational expressions are undefined when the denominator is equal to zero. |
| When you add, subtract, multiply or divide two rational numbers, the result is also a rational number. | c) When you $+$ / $-$ / \cdot / \div rational expressions, the result is a rational expression |
| Rational fractions are classified as proper fractions when the numeric value of the numerator is smaller than the denominator. | d) Rational expressions are classified as proper when the degree of the numerator is less than the degree of the denominator |

GO

Topic: Finding values of x that affect the domain of a rational expression

Identify the values of x for which the expression is undefined, if any.

13. $\frac{10}{x-4}$

Undefined for $x=4$

14. $\frac{22}{x}$

Undefined for $x=0$

15. $\frac{x-7}{x+15}$

Undefined for $x=-15$

16. $\frac{2x}{5}$

Defined for all values of x

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