

Pre-Calc Unit Lesson 10: Simplifying Complex Fractions/Radicals

Simplify the following problems:

$$1. \frac{\frac{5}{x}}{y} = \underline{\hspace{2cm}}$$
$$2. \frac{\frac{5}{x} + 3}{y} = \underline{\hspace{2cm}}$$

Multiply top and bottom by x in both problems and get:

$$\frac{5}{xy} \qquad \frac{5 + 3x}{xy}$$

$$3. \frac{4x(2x - 3) - (x^2 - 3x) \bullet 4}{(2x - 3)^2} =$$

$$\frac{8x^2 - 12x - 4x^2 + 12x}{(2x - 3)^2} =$$

$$\frac{4x^2}{(2x - 3)^2}$$

$$4. \sqrt{x}(x + 1) = x\sqrt{x} + \sqrt{x} = x^{\frac{3}{2}} + x^{\frac{1}{2}}$$

$$5. 10x^{-3} =$$

$$\frac{10}{x^3}$$

$$6. (10x)^{-3}$$

$$\frac{1}{1000x^3}$$

$$7. \sin x \cos x \csc x \bullet x^2 + 7x^{\frac{1}{2}} \tan x \bullet x^{-\frac{1}{2}} =$$

Answer: $x^2 \cos x + 7 \tan x$

$$8. \frac{4(x+3) \bullet x - 2x \bullet \frac{1}{x-3}}{y} =$$

$$\frac{4x^2 + 12x - \frac{2x}{x-3}}{y} = \frac{4x^2(x-3) + 12x(x-3) - 2x}{y(x-3)} =$$

$$\frac{4x^3 - 12x^2 + 12x^2 - 36x - 2x}{y(x-3)} = \frac{4x^3 - 38x}{y(x-3)}$$

$$9. 2x^{-\frac{1}{2}} + 4x^{\frac{1}{2}} =$$

$$\frac{2}{\sqrt{x}} + 4\sqrt{x} = \frac{2}{\sqrt{x}} + \frac{4\sqrt{x}\sqrt{x}}{\sqrt{x}} = \frac{2+4x}{\sqrt{x}}$$

or factor from the beginning and get $2x^{-\frac{1}{2}}(1+2x)$

Homework: Ditto Simplifying Complex Fractions/Radicals

****TEST on Pre-Calc Unit****

The following items are not in any section, but should be reviewed:

$$\sin^2 x = (\sin x)^2 \neq \sin x^2 = \sin(x^2)$$

Find the domain and range of $f(x) = [x]$

If $\tan x = 3$, then find $\sin x$.

Review? P. 36-37 #1-3, 7-14, 25-28, 39, 40