

Remember, we can rewrite a radical as a fractioned exponent.

Example: $\sqrt[3]{x^2} = x^{2/3}$

Remember, when multiplying with exponential terms, we add the exponents.

Example: $x^2 \cdot x^3 = x^{2+3} = x^5$

Remember, when dividing with exponential terms, we subtract the exponents.

Example: $\frac{x^7}{x^3} = x^{7-3} = x^4$

Remember, when raising an exponential term to another exponent, we multiply the exponents.

Example: $(x^3)^2 = x^{3 \cdot 2} = x^6$

Task 1. Several students were asked to write an expression equivalent to $x^{\frac{5}{2}}$. Rewrite each expression below using rational exponents. For each expression, indicate whether it is or is not equivalent to $x^{\frac{5}{2}}$.

Jasmine: $(\sqrt[4]{x})^{10}$

Lorena: $(x^2)^5$

Corey: $(\sqrt{x^2})^5$

Tabitha: $(\sqrt{x})^5$

** Only Jasmine and Tabitha*

Jennifer says $\frac{x^{10}}{x^4} = x^{\frac{5}{2}}$ because $\frac{10}{4} = \frac{5}{2}$. Decide whether Jennifer is correct or incorrect and explain why. **Incorrect**

Jasmine: $\sqrt[4]{x} = x^{1/4} \Rightarrow (x^{1/4})^{10}$ Multiply

$$x^{1/4 \cdot 10} = x^{10/4} = \boxed{x^{5/2}} \quad \checkmark$$

Lorena: $(x^2)^5 = x^{2 \cdot 5} = \underline{x^{10}}$

Multiply

Corey: $\sqrt{x^2} = x^{2/2} = x^1 \Rightarrow (x^1)^5$ Multiply

$$x^{1 \cdot 5} = \underline{x^5}$$

Tabitha: $\sqrt{x} = x^{1/2} \Rightarrow (x^{1/2})^5$ Multiply

$$x^{1/2 \cdot 5} = \boxed{x^{5/2}} \quad \checkmark$$

While yes, $\frac{10}{4} = \frac{5}{2}$, for $\frac{x^{10}}{x^4}$

we subtract the exponents $x^{10-4} = x^6$.

Task 2. Using any number between 1 and 9, fill in the boxes to create a true statement. You may only use a number once.

Boxes were
not given in
problem

accidentally,

so do not

complete this

task.

$$x \cdot (\sqrt{x}) = \frac{x}{x}$$