

Objective #8

Simplify expressions with rational exponents (Page 1 of 2)

Simplify:

1. $x^{-1/5} \cdot x^{-2/3}$ [A] $\frac{1}{x^{13/15}}$ [B] $\frac{1}{x^{2/15}}$ [C] $x^{13/15}$ [D] $x^{2/15}$

Add exponents

$$-\frac{1}{5} + -\frac{2}{3}$$

$$-\frac{3}{15} + -\frac{10}{15} = -\frac{13}{15}$$

This means we can rewrite the expression as

$$x^{-13/15}$$

$$\frac{1}{x^{13/15}}$$

since we had a negative exponent.

2. $\left(\frac{x^{-1/3}}{x^{-6}}\right)^{1/6}$ [A] $\frac{1}{x^{17/18}}$ [B] $x^{17/18}$ [C] $\frac{1}{x^{19/18}}$ [D] $x^{19/18}$

Power Rule

$$x^{-1/3 \cdot 1/6}$$

$$x^{-6 \cdot 1/6}$$

$$\frac{x^{-1/18}}{x^{-1}} = x^{-1/18 - (-1)}$$

Quotient Rule

$$x^{-1/18 - (-1)}$$

$$-\frac{1}{18} - (-\frac{18}{18}) = \frac{17}{18}$$

$$\Rightarrow x^{17/18}$$