

Objective #9

Simplify expressions w/ rational exponents (Page 2 of 2)

3. Simplify by writing the expression as a single quotient in which only positive exponents appear.

$$\frac{(49-x^2)^{1/2} + 4x^2(49-x^2)^{-1/2}}{49-x^2}$$

[A] $\frac{49+3x^2}{(49-x^2)^{3/2}}$

[B] $\frac{49+4x^2}{(49-x^2)^{3/2}}$

[C] $\frac{49+2x^2}{(49-x^2)^{3/2}}$

[D] none of these

$$\frac{(49-x^2)^{1/2} + 4x^2(49-x^2)^{-1/2}}{49-x^2}$$

Common Denominator

$$(49-x^2)^{-1/2} + 4x^2(49-x^2)^{-3/2}$$

$$= \frac{(49-x^2)^1}{(49-x^2)(49-x^2)^{1/2}} + \frac{4x^2}{(49-x^2)^{3/2}}$$

$$\frac{49-x^2}{(49-x^2)^{3/2}} + \frac{4x^2}{(49-x^2)^{3/2}}$$

Combine

$$\frac{49+3x^2}{(49-x^2)^{3/2}}$$

Separate

$$\frac{(49-x^2)^{1/2}}{(49-x^2)} + \frac{4x^2(49-x^2)^{-1/2}}{(49-x^2)}$$

$$(49-x^2)^{-1/2} + 4x^2(49-x^2)^{-3/2}$$

Quotient Rule

4. Simplify: $\left(\frac{b^{16}}{c^{12}}\right)^{3/4}$

Different base
⇒ no quotient rule

Use power rule

$$\frac{b^{16 \cdot 3/4}}{c^{12 \cdot 3/4}} = \frac{b^{12}}{c^9}$$