

Determine whether each expression is equivalent to $x^{\frac{7}{4}}$.

You will need:

- HW from Thur 8/30 →
- HW from last night (15-24)
- Agenda
- Pencil/pen for notes
- Spiral/comp notebook
- Algebra Nation book

Expression	Yes	No
$\sqrt[7]{x^4}$	<input type="radio"/>	<input checked="" type="radio"/>
$\sqrt[4]{x^7}$	<input checked="" type="radio"/>	<input type="radio"/>
$(\sqrt[4]{x})^7$	<input checked="" type="radio"/>	<input type="radio"/>
$\sqrt{x^{\frac{7}{4}}}$	<input type="radio"/>	<input checked="" type="radio"/>
$\sqrt[4]{x^5} \cdot \sqrt[4]{x^2}$	<input checked="" type="radio"/>	<input type="radio"/>
$\sqrt[5]{x^4} \cdot \sqrt[2]{x^4}$	<input type="radio"/>	<input checked="" type="radio"/>
$\frac{(\sqrt[4]{x})^7}{(\sqrt{x})^0}$	<input checked="" type="radio"/>	<input type="radio"/>

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Simplifying Radicals

Please have out your Algebra Nation book and opened to page 18.
If you did not do S1T7 as instructed, please fill out a pink slip.

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Section 1 – Topic 7 Pg. 18

Adding Expressions with Radicals and Rational Exponents

Let's explore operations with radical expressions and expressions with rational exponents. For each expression, label approximately where the answer would be found on the number line.

$$\sqrt{5} + \sqrt{2}$$



$$5^{\frac{1}{2}} + 2^{\frac{1}{2}}$$



$$\sqrt{5} + \sqrt{5}$$



$$5^{\frac{1}{2}} + 5^{\frac{1}{2}}$$



$$2\sqrt{3} - 8\sqrt{3}$$



$$2 \cdot 3^{\frac{1}{2}} - 8 \cdot 3^{\frac{1}{2}}$$



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Let's Practice! pg. 19

1. Perform the following operations.

a. $\sqrt{12} + \sqrt{3}$ ← Equivalent → b. $12^{\frac{1}{2}} + 3^{\frac{1}{2}}$

$$\begin{array}{r} 3\sqrt{3} \\ 5\sqrt{3} \\ \hline 8\sqrt{3} \end{array}$$

c. $\sqrt{72} + \sqrt{15} + \sqrt{18}$ ← Equivalent → d. $72^{\frac{1}{2}} + 15^{\frac{1}{2}} + 18^{\frac{1}{2}}$

Handwritten work for c:
 $\sqrt{36}\sqrt{2} + \sqrt{15} + \sqrt{9}\sqrt{2}$
 $(6\sqrt{2}) + \sqrt{15} + 3\sqrt{2}$
 $9\sqrt{2} + \sqrt{15}$

Handwritten work for d:
 $(6 \cdot 2)^{\frac{1}{2}} + 15^{\frac{1}{2}} + (3 \cdot 2)^{\frac{1}{2}}$
 $9 \cdot 2^{\frac{1}{2}} + 15^{\frac{1}{2}}$

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e. $\sqrt{32} + \sqrt[3]{16}$ Equivalent \longleftrightarrow f. $32^{\frac{1}{2}} + 16^{\frac{1}{3}}$

$$\begin{aligned} &\sqrt{16}\sqrt{2} + \sqrt[3]{8}\sqrt[3]{2} \\ &4\sqrt{2} + 2\sqrt[3]{2} \end{aligned}$$

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2. Perform the following operations. pg. 19

a. $\sqrt{6} + 3\sqrt{6}$ Equivalent \longleftrightarrow b. $6^{\frac{1}{2}} + 3 \cdot 6^{\frac{1}{2}}$

$$4\sqrt{6} \qquad \qquad \qquad \sqrt{6} + 3\sqrt{6}$$

$$\begin{aligned} x + 3x \\ 4x \end{aligned}$$

c. $\sqrt{50} + \sqrt{18} + \sqrt{10}$ Equivalent \longleftrightarrow d. $50^{\frac{1}{2}} + 18^{\frac{1}{2}} + 10^{\frac{1}{2}}$

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Equivalent

e. $\sqrt[3]{2} + \sqrt[3]{8} + \sqrt[3]{16}$ ◆-----◆ f. $2^{\frac{1}{3}} + 8^{\frac{1}{3}} + 16^{\frac{1}{3}}$

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BEAT THE TEST!

1. Which of the following expressions are equivalent to $3\sqrt{2}$?
Select all that apply.

- $3^{\frac{1}{2}} + 2^{\frac{1}{2}} = 5^{\frac{1}{2}} = \sqrt{5}$
- $8^{\frac{1}{2}} + 2^{\frac{1}{2}} = \sqrt{8} + \sqrt{2} = \sqrt{4\sqrt{2}} + \sqrt{2} = 2\sqrt{2} + \sqrt{2} = 3\sqrt{2}$
- $3 \cdot 2^{\frac{1}{2}} = 3 \cdot \sqrt{2} = 3\sqrt{2}$
- $\sqrt{18} = \sqrt{9\sqrt{2}} = 3\sqrt{2}$
- $2\sqrt{18}$
- $\sqrt{8} + \sqrt{2} = \sqrt{4\sqrt{2}} + \sqrt{2} = 2\sqrt{2} + \sqrt{2} = 3\sqrt{2}$

$3\sqrt{2}$
 $3(\sqrt{2})$
 $3 \cdot 2^{\frac{1}{2}}$

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2. Miguel completed a proof to show that $\sqrt{27} + \sqrt{3} = 4 \cdot 3^{\frac{1}{2}}$:

$$\begin{array}{l} \sqrt{27} + \sqrt{3} \\ \sqrt{9\sqrt{3}} + \sqrt{3} \\ 3\sqrt{3} + \sqrt{3} \end{array}$$

$$\begin{aligned} &\sqrt{27} + \sqrt{3} \\ &= 27^{\frac{1}{2}} + 3^{\frac{1}{2}} \\ &= \frac{\quad}{\quad} \\ &= 3 \cdot 3^{\frac{1}{2}} + 3^{\frac{1}{2}} \\ &= 4 \cdot 3^{\frac{1}{2}} \end{aligned}$$

Part A: Which expression can be placed in the blank to correctly complete Miguel's proof?

- (A) $3^{\frac{1}{2}}(9^{\frac{1}{2}} + 3^{\frac{1}{2}})$
- (B) $(9 \cdot 3)^{\frac{1}{2}} + 3^{\frac{1}{2}}$
- (C) $(9^{\frac{1}{2}} + 3^{\frac{1}{2}}) + 3^{\frac{1}{2}}$
- (D) $(9)^{\frac{1}{2}} + 3^{\frac{1}{2}}$

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Part B: Label and place $4 \cdot 3^{\frac{1}{2}}$ on the number line below.



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Homework

Watch Algebra Nation Video Section 1 Topic 8 and
fill in pages 21-23

Magnahigh.com assignment due Wed 9/12

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S1T8 pg. 21

$$\sqrt{10} \cdot \sqrt{2} \iff 10^{1/2} \cdot 2^{1/2}$$

$$\sqrt{10 \cdot 2} = \sqrt{20}$$

$$\sqrt{4} \sqrt{5}$$
$$\boxed{2\sqrt{5}}$$

Sep 7-9:06 AM

$$\sqrt{2} \cdot \sqrt[3]{2}$$

cannot be simplified
because the index (root)
are not the same

$$\frac{\sqrt{10}}{\sqrt{2}} = \sqrt{\frac{10}{2}} = \sqrt{5}$$

Sep 7-9:09 AM