

# Free download Algebra skill simplifying radicals answers (2023)

this free step by step guide will teach you an easy 3 step strategy for how to simplify a radical with a non perfect square inside of it together we will work through three examples and by the end of this guide you will have learned how to simplify radicals in a variety of math problems what is simplifying radicals simplifying radicals or simplifying radical expressions is when you rewrite a radical in its simplest form by ensuring the number underneath the square root sign the radicand has no square numbers as factors make the number as small as possible by extracting square factors from underneath the root sign how to simplify radical expressions a radical expression is composed of three parts a radical symbol a radicand and an index in this tutorial the primary focus is on simplifying radical expressions with an index of 2 this type of radical is commonly known as the square root components of a radical expression let's take 24 now prime factorization is  $2 \cdot 2 \cdot 2 \cdot 3$  we have two 2's so we have a perfect square we can simplify this to  $4 \cdot 6$  or  $2 \cdot 6$  so to simplify a square root use prime factorization to find any perfect squares that you can remove from the total under the radical to simplify radical expressions look for factors of the radicand with powers that match the index if found they can be simplified by applying the product and quotient rules for radicals as well as the property  $\sqrt[n]{a \cdot n} = a$  where  $a$  is positive improve your math knowledge with free questions in simplify radical expressions and thousands of other math skills simplify a radical expression using the product property step 1 find the largest factor in the radicand that is a perfect power of the index rewrite the radicand as a product of two factors using that factor step 2 use the product rule to rewrite the radical as the product of two radicals step 3 simplify the root of the perfect power simplifying radicals is the process of manipulating a radical expression into a simpler or alternate form generally speaking it is the process of simplifying expressions applied to radicals contents introduction simplifying simple radicals adding radicals multiplying radicals rationalizing denominators see also introduction simplifying radical expressions two variables algebra video khan academy google classroom about transcript a worked example of simplifying elaborate expressions that contain radicals with two variables in this example we simplify  $60x^2y \sqrt{48x}$  created by sal khan and monterey institute for technology and education questions how to simplify a radical expression using the quotient property simplify the fraction in the radicand if possible use the quotient property to rewrite the radical as the quotient of two radicals simplify the radicals in the numerator and the denominator this allows us to simplify the radical  $\sqrt{\frac{75}{5} \cdot \frac{5}{2} \cdot \frac{2}{3} \cdot \frac{3}{5} \cdot \frac{3}{5} \cdot \frac{3}{5}}$  so  $\sqrt{75} \sqrt{\frac{5}{2} \cdot \frac{2}{3} \cdot \frac{3}{5} \cdot \frac{3}{5}}$  want another example like this check out this video practice problem 1 1 simplify remove all perfect squares from inside the square root a 12 check want to try more problems like these check out this exercise simplifying square roots with variables simplifying a radical expression using the product property find the largest factor in the radicand that is a perfect power of the index rewrite the radicand as a product of two factors using that factor use the product rule to rewrite the radical as the product of two radicals simplify the root of the perfect power solution first factor the numbers  $9 \cdot 3 \cdot 2$  and  $25 \cdot 5 \cdot 2$  then  $\sqrt{9} \sqrt{25} \sqrt{3 \cdot 2} \sqrt{5 \cdot 2}$  now use radical rule color blue  $\sqrt[n]{a \cdot n} = a$  then  $\sqrt{9} \times \sqrt{25} \sqrt{3 \cdot 2} \sqrt{5 \cdot 2} = 3 \cdot 5 \cdot 15$  radicals example 3 find the square root of  $\sqrt{225}$  solution the albert team last updated on may 20 2023 are you tired of feeling confused or overwhelmed when it comes to radicals in math fear not because in this blog post we'll break down everything you need to know about simplifying radicals with easy to follow examples simplifying radicals write each expression in simplest radical form 1  $\sqrt{48} = 2\sqrt{3} \cdot 2\sqrt{3} = 4\sqrt{3}$  2  $\sqrt{12} = 2\sqrt{3}$  3  $\sqrt{16} = 4$  4  $\sqrt{36} = 6$  5  $\sqrt{64} = 8$  6  $\sqrt{125} = 5\sqrt{5}$  7  $\sqrt{8} = 2\sqrt{2}$  8  $\sqrt{20} = 2\sqrt{5}$  9  $\sqrt{18} = 3\sqrt{2}$  10  $\sqrt{32} = 4\sqrt{2}$  11  $\sqrt{50} = 5\sqrt{2}$  12  $\sqrt{27} = 3\sqrt{3}$  1 this tutorial delves into the essential mathematical skill of simplifying radicals a topic crucial for students educators or anyone looking to deepen their simplifying radical expressions addition a worked example of simplifying an expression that is a sum of several radicals in this example we simplify  $2x^2 \sqrt{48} + 3 \cdot 2x^2 \sqrt{8}$  created by sal khan and monterey institute for technology and education in general when we simplify radicals we want to factor out a perfect square for instance let's say we're simplifying the radical  $\sqrt{84}$  because of the radical law we can rewrite a radical expression  $\sqrt{ab}$  as  $\sqrt{a} \sqrt{b}$  in our example we can rewrite  $\sqrt{84}$  as  $\sqrt{4} \sqrt{21}$  we now have the radical  $\sqrt{4} \sqrt{21} = 2\sqrt{21}$  simplifying radicals date period simplify use absolute value signs when necessary 1  $\sqrt{24} = 2\sqrt{6}$  2  $\sqrt{3} = \sqrt{3}$  3  $\sqrt{100} = 10$  4  $\sqrt{162} = 9\sqrt{2}$  5  $\sqrt{512} = 16\sqrt{2}$  6  $\sqrt{25} = 5$  7  $\sqrt{4} = 2$  8  $\sqrt{128} = 8\sqrt{2}$  9  $\sqrt{8} = 2\sqrt{2}$  10  $\sqrt{2n^2} = n\sqrt{2}$  11  $\sqrt{4} = 2$  12  $\sqrt{8} = 2\sqrt{2}$  13  $\sqrt{6} = \sqrt{6}$  14  $\sqrt{98} = 7\sqrt{2}$  15  $\sqrt{224} = 8\sqrt{7}$  16  $\sqrt{2r^2} = r\sqrt{2}$  17  $\sqrt{5} = \sqrt{5}$  18  $\sqrt{7r^2} = r\sqrt{7}$  19  $\sqrt{8} = 2\sqrt{2}$  20  $\sqrt{3} = \sqrt{3}$  21  $\sqrt{9} = 3$  22  $\sqrt{392} = 14\sqrt{2}$  23  $\sqrt{144} = 12$  24  $\sqrt{100} = 10$  25  $\sqrt{162} = 9\sqrt{2}$  26  $\sqrt{512} = 16\sqrt{2}$  27  $\sqrt{2} = \sqrt{2}$  28  $\sqrt{405} = 9\sqrt{5}$  29  $\sqrt{3} = \sqrt{3}$  30  $\sqrt{5x^3y^2} = x\sqrt{5xy^2}$  31  $\sqrt{12} = 2\sqrt{3}$  32  $\sqrt{16} = 4$  33  $\sqrt{a^3b^8} = a\sqrt{ab^8}$  34  $\sqrt{2ab^2} = \sqrt{2ab^2}$  35  $\sqrt{2b^2} = b\sqrt{2}$  36  $\sqrt{13} = \sqrt{13}$  37  $\sqrt{128} = 8\sqrt{2}$  38  $\sqrt{x^7y^7} = x^3y^3\sqrt{xy}$  39  $\sqrt{2x^4y^3} = x^2y\sqrt{2xy}$  simplifying radical expressions date period simplify 1  $\sqrt{125} = 5\sqrt{5}$  2  $\sqrt{216} = 6\sqrt{6}$  3  $\sqrt{512} = 16\sqrt{2}$  4  $\sqrt{16} = 4$  5  $\sqrt{216} = 6\sqrt{6}$  6  $\sqrt{100} = 10$  7  $\sqrt{v} = \sqrt{v}$  8  $\sqrt{80} = 4\sqrt{5}$  9  $\sqrt{p^2} = p$  10  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