

Lesson 19: Working with Roots and Radicals

Multiplying Roots

Product Rule for Square Roots

If a and b are nonnegative real numbers, then $\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$

$$\sqrt{7} \cdot \sqrt{2y} = \sqrt{14y} \quad \sqrt{5} \cdot \sqrt{7} = \sqrt{35}$$

This type of multiplication of radicals is only possible if the indices (roots) are the same.

TRY: $\sqrt{5} \cdot \sqrt{11}$ $\sqrt{7} \cdot \sqrt{3x}$

Root Chart $\sqrt{a} = b$

$b \rightarrow$	2	3	4	5	6	7	8	9	10	11	12	13	14	15
\sqrt{a}	4	9	16	25	36	49	64	81	100	121	144	169	196	225

Square Roots Simplified

An expression containing a square root is simplified if:

- The radicand does not contain any factors that are perfect squares other than 1.
- The radicand does not contain any variables with exponents greater than 1.
- No radicals remain in the denominator of a fraction.