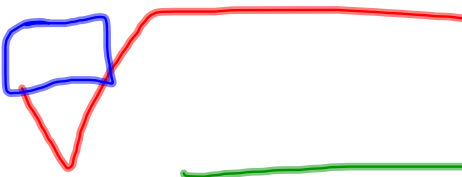


Radicals

root index  radicand

$$\sqrt{25} = 5$$

$$\sqrt{24} = \sqrt{2^3 \cdot 3}$$

$$\sqrt{3}$$

fractional
exponent

$$\Downarrow$$
$$3^{1/2}$$

$${}^5\sqrt{7} = 7^{1/5}$$

Radical

Simplify

$$\sqrt{9} = 3$$

$$\sqrt{25} = 5$$

$$\sqrt{27} = 3\sqrt{3}$$

$$\sqrt{x^2 y^3} = x y \sqrt{y}$$

Mult/Div

Add/Subt

Solve

$$1\sqrt{3} \cdot 1\sqrt{5}$$

$$2\sqrt{7} \cdot 3\sqrt{5}$$

mult. \rightarrow outside \times outside
inside \times inside

$$1\sqrt{15}$$

$$6\sqrt{35}$$

$$\sqrt{8} \cdot \sqrt{12}$$

No perfect n^{th} power under
the radical sign

$$\sqrt{2^3} \cdot \sqrt{2^2 \cdot 3} = \sqrt{2^5 \cdot 3}$$

$$2^2 \sqrt{2 \cdot 3}$$

120

5 · 24

5 · 2 · 12

5 · 2 · 2² · 3

$$\sqrt[3]{10} \cdot \sqrt{70} \cdot \sqrt[3]{120}$$

$$\sqrt[3]{2 \cdot 5} \cdot \sqrt{5 \cdot 2 \cdot 7} \cdot \sqrt[3]{5 \cdot 2^3 \cdot 3}$$

$$18 \sqrt{5^3 \cdot 2^5 \cdot 7 \cdot 3}$$

$$18 \cdot 5 \cdot 2^2 \sqrt{5 \cdot 2 \cdot 7 \cdot 3}$$

$$360 \sqrt{210}$$

$$2\sqrt{6x^2y^3} \cdot 3\sqrt{18x^5y^7}$$

$$2\sqrt{2 \cdot 3x^2y^3} \cdot 3\sqrt{2 \cdot 3^2x^5y^7}$$

↓ primes

$$6\sqrt{2^2 \cdot 3^3 \cdot x^7 \cdot y^{10}}$$

← Law of Exponents (+)

$$6 \cdot 2 \cdot 3 \cdot x^3 \cdot y^5 \sqrt{3x}$$

→ simplify divide by "2"

$$5\sqrt{5x^2y^7z^3} \cdot 2\sqrt{15x^2y^2z^4} \cdot 3\sqrt{27xy^6}$$

$$5 \cdot 2 \cdot 3 \cdot \sqrt{5^2 \cdot 3^4 x^4 y^{15} z^7}$$

$$5 \cdot 2 \cdot 3 \cdot 5 \cdot 3^2 x^2 y^7 z^3 \sqrt{yz}$$

$$5^2 \cdot 2 \cdot 3^3 x^2 y^7 z^3 \sqrt{yz}$$



$$\textcircled{2} (\overset{\curvearrowright}{x} + \overset{\curvearrowright}{3}) = 2x + 6$$

$$x^2 (3x^3 + 7x^2 - 3)$$

$$3x^5 + 7x^4 - 3x^3$$

$$\textcircled{\sqrt{2}} (\overset{\curvearrowright}{\sqrt{3}} + \overset{\curvearrowright}{1}) = \sqrt{2 \cdot 3} + \sqrt{2}$$

$$\sqrt{6} + \sqrt{2}$$

$$\textcircled{\sqrt{3}} (\overset{\curvearrowright}{\sqrt{2 \cdot 3}} + \overset{\curvearrowright}{\sqrt{3 \cdot 5}})$$

$$\sqrt{2 \cdot 3^2} + \sqrt{5 \cdot 3^2}$$

$$3\sqrt{2} + 3\sqrt{5}$$

$$2(3+5)$$

$(x+2)(x+3)$ FOIL

$$x(x+3) + 2(x+3)$$

$$x^2 + 3x + 2x + 6$$

$$x^2 + 5x + 6$$

$(x+2)^2$ ~~\rightarrow~~ $x^2 + 4$

$$(x+2)(x+2)$$

$$x(x+2) + 2(x+2)$$

$$x^2 + 2x + 2x + 4$$

$$x^2 + 4x + 4$$

$$(\sqrt{3}+1)(\sqrt{2}+5)$$

$$\sqrt{3}(\sqrt{2}+5) + 1(\sqrt{2}+5)$$

$$\sqrt{6} + 5\sqrt{3} + \sqrt{2} + 5$$

$$(2\sqrt{6} + 3)(3\sqrt{3} - 4)$$

$$2\sqrt{6}(3\sqrt{3}-4) + 3(3\sqrt{3}-4)$$

$$6\sqrt{2} \cdot 3^2 - 8\sqrt{2} \cdot 3 + 9\sqrt{3} - 12$$

$$6 \cdot 3 \sqrt{2} - 8 \sqrt{2} \cdot 3 + 9\sqrt{3} - 12$$

$$(\sqrt{3} - \sqrt{2})^2$$

$$(\sqrt{3} - \sqrt{2})(\sqrt{3} - \sqrt{2})$$

$$\sqrt{3}(\sqrt{3} - \sqrt{2}) - \sqrt{2}(\sqrt{3} - \sqrt{2})$$

$$\sqrt{3}^2 - \sqrt{2 \cdot 3} - \sqrt{2 \cdot 3} + \sqrt{2}^2$$

$$\textcircled{3} - 2\sqrt{2 \cdot 3}$$

$$5 - 2\sqrt{2 \cdot 3}$$

$$\textcircled{+2}$$

$$1. \quad 5\sqrt{6} \cdot 2\sqrt{12}$$

$$2. \quad 2\sqrt{10} \cdot 3\sqrt{15} \cdot \sqrt{6}$$

$$3. \quad \sqrt{6x^2y^3} \cdot 2\sqrt{8x^3y} \cdot \sqrt{12xy^4}$$

$$4. \quad (5\sqrt{3} - 6)(2\sqrt{3} + 1)$$

$$5. \quad (3\sqrt{5} - 2\sqrt{3})^2$$