

Assume a, b, m, n, v, and w are positive

<p>Product of a Power $a^n \cdot a^m = a^{n+m}$</p> <p>Product of Powers $(a^n \cdot b^m)(a^v \cdot b^w) = a^{n+v}b^{m+w}$</p>	<p>Power of a Power $(a^n)^m = a^{mn}$</p> <p>Power of Powers $(a^n b^v)^m = a^{mn}b^{mv}$</p>	<p>Power of a Quotient $\left(\frac{a^n}{b^v}\right)^m = \frac{a^{mn}}{b^{mv}}$</p> <p>Quotient of Powers $\frac{a^n}{a^m} = a^{n-m}$</p>
<p>Zero as an Exponent $a^0 = 1$ with $a \neq 0$</p>	<p>Negative Exponent 1 $a^{-n} = \frac{1}{a^n}$ with $a \neq 0$</p>	<p>Negative Exponent 2 $b^m = \frac{1}{b^{-m}}$ with $b \neq 0$</p>
<p>Rational Exponent $a^{\frac{m}{n}} = \sqrt[n]{a^m}$</p>	<p>Laws of Radicals</p> $\sqrt[n]{a^n} = a$ $\sqrt[n]{ab} = \sqrt[n]{a}\sqrt[n]{b}$ $\sqrt[n]{a^m b^w} = \sqrt[n]{a^m}\sqrt[n]{b^w}$ $\sqrt[n]{a^m} = (\sqrt[n]{a})^m$ $\sqrt[m]{\sqrt[n]{a}} = \sqrt[mn]{a}$ $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$ $\sqrt[n]{\frac{a^m}{b^w}} = \frac{\sqrt[n]{a^m}}{\sqrt[n]{b^w}}$	

These numbers are POWERFULLY useful

1	4	9	16	25	36	49	64	81	100
121	144	169	196	225	256	289	324	361	400
441	484	529	576	625					

1	8	27	64	125	216	343	512	729	1000
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1	1	1	1	1
2	4	8	16	32
3	9	27	81	243
4	16	64	256	1024
5	25	125	625	3125

Failure to include the process steps will result in NO credit on the actual quiz

Example: $\sqrt{8x^{15}y^9} = 2x^7y^4\sqrt{2xy}$ This would get you NO CREDIT

$\sqrt{8x^{15}y^9} = \sqrt{4x^{14}y^8}\sqrt{2x^1y^1} = 2x^7y^4\sqrt{2x}$ This would get credit because it has a process step listed

$\sqrt{8x^{15}y^9} = (2^3x^{15}y^9)^{\frac{1}{2}} = 2^{\frac{3}{2}}x^{\frac{15}{2}}y^{\frac{9}{2}} = 2^1 2^{\frac{1}{2}}x^7 x^{\frac{1}{2}}y^4 y^{\frac{1}{2}} = 2x^7y^4\sqrt{2xy}$ This would get credit because it has process steps listed

Rewrite in exponential form	Rewrite in radical form
1. $\sqrt[3]{5xy^2}$	3. $25^{\frac{1}{3}}x^{\frac{2}{3}}y^{\frac{4}{3}}$
2. $\sqrt{14x^5yw^7}$	4. $10^{\frac{1}{2}}x^{\frac{7}{2}}y$

Explain each of the mistakes and give the correct answers

<p>5. $\sqrt{100x^3y^4} = 50xy^2$</p> <p>State the mistake _____</p> <p>State the correct answer _____</p>	<p>6. $\sqrt[3]{27x^9y^{12}} = 3x^6y^9$</p> <p>State the mistake _____</p> <p>State the correct answer _____</p>
<p>7. $\frac{1}{\sqrt[3]{5}} = \frac{1}{\sqrt[3]{5}} \cdot \frac{\sqrt[3]{5}}{\sqrt[3]{5}} = \frac{\sqrt[3]{5}}{5}$</p> <p>State the mistake _____</p> <p>State the correct answer _____</p>	<p>8. $\sqrt{4x^{81}y^9} = 2x^9y^3$</p> <p>State the mistake _____</p> <p>State the correct answer _____</p>

Simplify each of the following radical expressions completely SHOW YOUR WORK TO RECEIVE CREDIT

9. $\sqrt[3]{32x^9y^{11}}$	10. $\sqrt[3]{-8x^6y^2}$	11. $\sqrt{1200x^4yw^8}$
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Simplify each of the following radical expressions completely SHOW YOUR WORK TO RECEIVE CREDIT

12. $\sqrt{\frac{25}{80xy^4}}$

13. $\sqrt{\frac{3x^5y^4}{27xy^{41}}}$

14. $\sqrt[3]{\frac{125x^{12}}{16x^{24}y^5}}$

Simplify each expression completely and state your final answer using only positive exponents

SHOW ALL OF YOUR WORK IN A CLEAR MANNER

15. $\left(\frac{(16x^8y^9)^2}{625x^{12}y^{-7}}\right)^{\frac{-1}{4}}$

Simplify each expression completely and state your final answer using only positive exponents

SHOW ALL OF YOUR WORK IN A CLEAR MANNER

$$16. \frac{3x^{\frac{3}{2}}y^{\frac{-7}{2}} \cdot 2x^0y^3}{4x^{\frac{-1}{2}}y^{-2} \cdot 9x^{\frac{5}{2}}y}$$