

Unit 1

L9 Rational Exponents

Warm up:

- 1) $7^2 =$
- 5) $5^4 =$
- 9) $\sqrt[3]{8} =$
- 2) $\sqrt{49} =$
- 6) $\sqrt[4]{625} =$
- 10) $\sqrt[4]{81} =$
- 3) $3^3 =$
- 7) $(-3)^3 =$
- 11) $\sqrt[4]{-16} =$
- 4) $\sqrt[3]{27} =$
- 8) $\sqrt[3]{-27} =$
- 12) $\sqrt[3]{-125} =$



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L9 Rational Exponents

If

$b^n = a$

then

$\sqrt[n]{a} = b$

or

$a^{\frac{1}{n}} = \sqrt[n]{a} = b$

Note that $\sqrt[n]{a}$ does not exist if n is even and a < 0

Example: $\sqrt[2]{-64}$ and $\sqrt[4]{-64}$ don't exist

Where as $\sqrt[3]{-64} = -4$, because
 $(-4)^3 = (-4)(-4)(-4) = -64$

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Ex 1: Evaluate:

- 1) $169^{\frac{1}{2}} =$
- 2) $(-169)^{\frac{1}{2}} =$
- 3) $-169^{\frac{1}{2}} =$
- 4) $125^{\frac{1}{3}} =$
- 5) $(-125)^{\frac{1}{3}} =$

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Ex 1: Evaluate:

- 6) $-125^{\frac{1}{3}} =$
- 7) $\sqrt[3]{2^3} =$
- 8) $144^{-\frac{1}{2}} =$
- 9) $\sqrt[3]{-\frac{8}{27}} =$

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Ex 2: Simplify:

a) $\sqrt[3]{\frac{8x^9}{x^3}}$

b) $\left(\frac{9a^{-2}}{b^4}\right)^{-\frac{1}{2}}$

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Practice:
1.7 # 1 - 3



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