Classnotes
9/18/18
83/184

N^th Roots

N^th Roots = $\sqrt[n]{\ }$

invisible 2 here

1) $\sqrt{64}$
8

tells us we will circle 3

2) $\sqrt[3]{64}$

8 8
4 2 4 2
2 2 2 2

$\sqrt[3]{2\cdot2\cdot2}\cdot\sqrt[3]{2\cdot2\cdot2}$

$\sqrt[3]{8}\cdot\sqrt[3]{8}$
$2\cdot2$
4

$\sqrt[3]{8}$ means $?^3=8$

we will circle 4

3) $\sqrt[4]{64}$

$\sqrt[4]{2\cdot2\cdot2\cdot2}\cdot2\cdot2$

$\sqrt[4]{16}\cdot\sqrt[4]{4}$
$2\sqrt[4]{4}$

we will circle 5

4) $\sqrt[5]{64}$

$\sqrt[5]{2\cdot2\cdot2\cdot2\cdot2}2$

$\sqrt[5]{32}\cdot\sqrt[5]{2}$
$2\sqrt[5]{2}$

we will circle 6

5) $\sqrt[6]{64}$

$\sqrt[6]{2\cdot2\cdot2\cdot2\cdot2\cdot2}$

$\sqrt[6]{64}=2$

6) $\sqrt[3]{54}$

9 6
3 3 3 2

$\sqrt[3]{3\cdot3\cdot3}\cdot2$

$?^3=27 \leftrightarrow \sqrt[3]{27}\cdot\sqrt[3]{2}$
$3\sqrt[3]{2}$

Class Notes
9/18/18
B3/B4

Rational Exponents

Write in radical form $x^{\frac{\text{power}}{\text{root}}}$

1) $x^{3/4} = \sqrt[4]{x^3}$

2) $x^{3/2} = \sqrt[2]{x^3}$ (don't write it, 2's are assumed)
$= \sqrt{x^3}$

3) $x^{1/10} = \sqrt[10]{x}$

these two are not the same

4) $5x^{3/4} = 5 \cdot \sqrt[4]{x^3} = 5\sqrt[4]{x^3}$

5) $(5x)^{3/4} = \sqrt[4]{(5x)^3} = 5^{3/4} \cdot x^{3/4}$

6) $4x^{1/2}$ $\quad 4\sqrt{x}$

7) $(4x)^{1/2}$ $\quad \sqrt{4x}$

8) $\sqrt[5]{x^3}$ $\quad x^{3/5}$

invisible numbers → 9) $\sqrt{x} = x^{1/2}$

10) $3\sqrt[4]{x^5} = 3x^{5/4}$

parenthesis stay → 11) $\sqrt[4]{(3x)^5} = (3x)^{5/4}$

12) $\sqrt[4]{3x^5}$

$\sqrt[4]{3^1 x^5}$

$\sqrt[4]{3^1} \cdot \sqrt[4]{x^5}$

$3^{1/4} \cdot x^{5/4}$