Name Key Date

Mrs. Roumbos 8R Math Period

Square Roots and Cube Roots of Perfect Roots

I. Square Roots

a) Taking the Square root of a number is the inverse (opposite) of squaring a number.
↳ $5^2 = 25$ calc: x^2

b) $\sqrt{\ }$ is the square root symbol.
calc: 2nd x^2 to get $\sqrt{\ }$

c) Every positive number has two square roots, one positive and one negative
Ex: $\sqrt{16} = 4$ b/c $4 \cdot 4 = 16$ and
$\sqrt{16} = -4$ b/c $-4 \cdot -4 = 16$
so $\sqrt{16} = \pm 4$

d) Principal square root: the positive square root

e) Examples: Simplify

1) $4^2 = 16$

2) $15^2 = 225$

3) $7^2 = 49$

4) $\sqrt{100} = 10$

5) $\sqrt{400} = 20$

6) $\sqrt{25} = 5$

7) $-\sqrt{9} = -3$

8) $-\sqrt{4} = -2$

★9) $\sqrt{-144}$ = Not Real

10) $\pm\sqrt{64} = \pm 8$

11) $\pm\sqrt{4} = \pm 2$

12) $\pm\sqrt{81} = \pm 9$

★13) $\sqrt{\frac{1}{9}} = \frac{\sqrt{1}}{\sqrt{9}} = \frac{1}{3}$

★14) $-\sqrt{\frac{144}{225}} = -\frac{\sqrt{144}}{\sqrt{225}} = \frac{-12}{15}$

★15) $\sqrt{\frac{16}{100}} = \frac{\sqrt{16}}{\sqrt{100}} = \frac{4}{10}$

★ For #'s 13-15 you MUST separate the fractions 1st
★ simplify the √'s separately
★ Don't use the $\boxed{A\frac{b}{c}}$ button
★ Don't reduce your answer

II. Cube Roots:

a) Find the cube root is the inverse (opposite) of cubing a number.

b) $\sqrt[3]{\ }$ is the symbol for cube root

On Calc: [3] [2nd] [^] to get $\sqrt[x]{3}$

ex $\sqrt[3]{125} = 5$ B/C $5 \cdot 5 \cdot 5 = 125$

$\sqrt[3]{-125} = -5$ B/C $-5 \cdot -5 \cdot -5 = -125$

c) Examples: Simplify

1) $2^3 = 8$ Calc: [2] [^] [3] (^ = exponent button)

2) $7^3 = 343$

3) $10^3 = 1000$

4) $\sqrt[3]{8} = 2$

5) $\sqrt[3]{27} = 3$

6) $\sqrt[3]{-1000} = -10$

7) $-\sqrt[3]{1} = -1$

☆ 8) $\sqrt[3]{\frac{64}{125}} = \frac{\sqrt[3]{64}}{\sqrt[3]{125}} = \frac{4}{5}$

☆ 9) $\sqrt[3]{\frac{216}{729}} = \frac{\sqrt[3]{216}}{\sqrt[3]{729}} = \frac{6}{9}$

☆ For 8 & 9
- ☆ separate the fraction 1st
- ☆ Simplify the $\sqrt[3]{}$'s separately
- ☆ NU [A b/c] button
- ☆ don't reduce your answer