Class Notes #1: Roots and Radicals
Math 95

Definition

In general, if x^n = _____ then x is an _____ of _____.

Example 1.

If $3^2 = 9$, then _____ is a _____ root of 9.

If $(-3)^2 = 9$, then _____ is a _____ root of 9.

If $6^3 = 216$, then 6 is a _____ root of _____.

If $5^4 = 625$, then _____ is a _____ root of 625.

Question 1: If $4^3 = 64$, then 4 is a _____ root of 64.

Principal Square Root:

The **principal square root** of a _____ is the nonnegative square root.

The symbol _____ represents the _____ of a.

Principal n^{th} Root:

.

The symbol _____ represents the _____ of a.

Anatomy of a radical: $\sqrt[n]{a}$

Example 2. Evaluate, if possible. If the result is not a real number, write: Not a real number.

a. $\sqrt{25}$ = _____ b. $-\sqrt{25}$ = _____ c. $\sqrt{-25}$ = _____

d. $\sqrt[3]{8}$ = _____ e. $-\sqrt[3]{8}$ = _____ f. $\sqrt[3]{-8}$ = _____

Question 2: Evaluate, if possible. If the result is not a real number, write: Not a real number. If a calculator is needed, approximate your answer to two decimal places.

a. $\sqrt{9}$ = _____ b. $\sqrt[3]{1000}$ = _____ c. $\sqrt{8}$ = _____

d. $\sqrt[4]{17}$ = _____ e. $\sqrt[4]{(9)^4}$ = _____ f. $\sqrt[2]{(7)^2}$ = _____

g. $\sqrt[2]{-(7)^2}$ = _____ h. $\sqrt[2]{(-7)^2}$ = _____ i. $-\sqrt[2]{(7)^2}$ = _____

j. $\sqrt[3]{125}$ = _____ k. $\sqrt[3]{-125}$ = _____ l. $-\sqrt[3]{125}$ = _____

m. $\sqrt[4]{16}$ = _____ n. $\sqrt[4]{-16}$ = _____ o. $-\sqrt[4]{16}$ = _____