Name Key Period____ Date_____
Algebra 2: Worksheet A 2006-2007
Section 8.6

1) Rewrite the expression using rational exponents.

Example: $\sqrt[4]{15} = 15^{\frac{1}{4}}$

A) $\sqrt{20}$ $20^{1/2}$ B) $\sqrt[3]{5}$ $5^{1/3}$ C) $\sqrt[4]{12}$ $12^{1/4}$ D) $\sqrt[5]{30}$ $30^{1/5}$ E) $\sqrt[7]{100}$ $100^{1/7}$

2) Rewrite the expression using radical notation.

Example: $7^{\frac{1}{5}} = \sqrt[5]{7}$

A) $3^{\frac{1}{2}}$ $\sqrt{3}$ B) $11^{\frac{1}{3}}$ $\sqrt[3]{11}$ C) $18^{\frac{1}{4}}$ $\sqrt[4]{18}$ D) $25^{\frac{1}{6}}$ $\sqrt[6]{25}$ E) $42^{\frac{1}{8}}$ $\sqrt[8]{42}$

3) Rewrite the expression using rational exponents.

Example: $(\sqrt[3]{6})^2 = 6^{\frac{2}{3}}$

A) $(\sqrt{9})^5$ $9^{5/2}$ B) $(\sqrt[3]{13})^4$ $13^{4/3}$ C) $(\sqrt[4]{17})^3$ $17^{3/4}$ D) $(\sqrt[5]{2})^3$ $2^{3/5}$ E) $(\sqrt{6})^7$ $6^{7/2}$

4) Rewrite the expression using radical notation.

Example: $22^{\frac{4}{5}} = (\sqrt[5]{22})^4$

A) $21^{\frac{2}{3}}$ $\sqrt[3]{21^2}$ B) $40^{\frac{5}{2}}$ $\sqrt{40^5}$ C) $8^{\frac{2}{5}}$ $\sqrt[5]{8^2}$ D) $30^{\frac{3}{4}}$ $\sqrt[4]{30^3}$ E) $19^{\frac{5}{3}}$ $\sqrt[3]{19^5}$

5) Evaluate the expression without a calculator.

Example: $9^{\frac{1}{2}} = \sqrt{9} = 3$ Example: $(-8)^{\frac{4}{3}} = (\sqrt[3]{-8})^4 = (-2)^4 = 16$

Example: $25^{-\frac{3}{2}} = \frac{1}{25^{3/2}} = \frac{1}{(\sqrt{25})^3} = \frac{1}{5^3} = \frac{1}{125}$

A) $25^{\frac{1}{2}}$ B) $4^{\frac{3}{2}}$ C) $8^{\frac{2}{3}}$ D) $27^{\frac{2}{3}}$ E) $64^{\frac{2}{3}}$

F) $16^{\frac{3}{4}}$ G) $36^{\frac{1}{2}}$ H) $100^{\frac{3}{2}}$ I) $9^{\frac{3}{2}}$ J) $(-8)^{\frac{2}{3}}$

K) $(-27)^{\frac{2}{3}}$ L) $(-8)^{\frac{5}{3}}$ M) $(-8)^{\frac{4}{3}}$ N) $-8^{\frac{4}{3}}$ O) $(-32)^{\frac{3}{5}}$

P) $16^{-\frac{1}{2}}$ Q) $49^{-\frac{1}{2}}$ R) $4^{-\frac{3}{2}}$ S) $(-27)^{-\frac{1}{3}}$ T) $(-8)^{-\frac{2}{3}}$

A $25^{1/2} = \sqrt{25}$

$\boxed{5}$

B $4^{3/2} = \sqrt{4^3}$

$\boxed{8} = 2^3$

C $8^{2/3} = \sqrt[3]{8^2}$

$= 2^2 = \boxed{4}$

D $27^{2/3} = \sqrt[3]{27^2}$

$= 3^2 = \boxed{9}$

E $64^{2/3} = \sqrt[3]{64^2}$

$4^2 = \boxed{16}$

F $16^{3/4} = \sqrt[4]{16^3}$

$= 2^3 = \boxed{8}$

G $36^{1/2} = \sqrt[2]{36}$

$= \boxed{6}$

H $100^{3/2} = \sqrt[2]{100^3}$

$= 10^3 = \boxed{1000}$

I $9^{3/2} = \sqrt[2]{9^3}$

$= 3^3 = \boxed{27}$

J $(-8)^{2/3} = \sqrt[3]{(-8)^2}$

$= (-2)^2 = \boxed{4}$

K $(-27)^{2/3} =$

$= \sqrt[3]{-27^2} = (-3)^2 = \boxed{9}$

L $(-8)^{5/3} = \sqrt[3]{-8^5}$

$= (-2)^5 = \boxed{-32}$

M $(-8)^{4/3} = \sqrt[3]{(-8)^4}$

$= (-2)^4 = \boxed{16}$

N $-8^{4/3} = -\sqrt[3]{8^4}$

$-2^4 = \boxed{-16}$

O $(-32)^{3/5} = \sqrt[5]{(-32)^3}$

$= (-2)^3 = \boxed{-8}$

P $16^{-1/2} = \frac{1}{16^{1/2}}$

$\frac{1}{\sqrt{16}} = \boxed{\frac{1}{4}}$

Q $49^{-1/2} = \frac{1}{49^{1/2}}$

$= \frac{1}{\sqrt{49}} = \boxed{\frac{1}{7}}$

R $4^{-3/2} = \frac{1}{4^{3/2}}$

$= \frac{1}{\sqrt[2]{4^3}} = \frac{1}{2^3} = \boxed{\frac{1}{8}}$

S $(-27)^{-1/3} =$

$\frac{1}{\sqrt[3]{-27}} = \boxed{\frac{1}{-3}}$

T $(-8)^{-2/3} = \frac{1}{(-8)^{2/3}}$

$\frac{1}{\sqrt[3]{(-8)^2}} = \frac{1}{(-2)^2} = \boxed{\frac{1}{4}}$