

Radicals and Rational Exponents

Date _____ Period _____

Write each expression in radical form.

1) $7^{\frac{1}{2}}$

2) $4^{\frac{4}{3}}$

3) $2^{\frac{5}{3}}$

4) $7^{\frac{4}{3}}$

5) $6^{\frac{3}{2}}$

6) $2^{\frac{1}{6}}$

Write each expression in exponential form.

7) $(\sqrt{10})^3$

8) $\sqrt[6]{2}$

9) $(\sqrt[4]{2})^5$

10) $(\sqrt[4]{5})^5$

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

12) $\sqrt[6]{10}$

Write each expression in radical form.

13) $(5x)^{-\frac{5}{4}}$

14) $(5x)^{-\frac{1}{2}}$

15) $(10n)^{\frac{3}{2}}$

16) $a^{\frac{6}{5}}$

17) $(6v)^{1.5}$

18) $m^{-\frac{1}{2}}$

Write each expression in exponential form.

19) $(\sqrt[4]{m})^3$

20) $(\sqrt[3]{6x})^4$

21) $\sqrt[4]{v}$

22) $\sqrt{6p}$

23) $(\sqrt[3]{3a})^4$

24) $\frac{1}{(\sqrt{3k})^5}$

Simplify.

25) $9^{\frac{1}{2}}$

26) $343^{-\frac{4}{3}}$

27) $1000000^{\frac{1}{6}}$

28) $36^{\frac{3}{2}}$

29) $(x^6)^{\frac{1}{2}}$

30) $(9n^4)^{\frac{1}{2}}$

31) $(64n^{12})^{-\frac{1}{6}}$

32) $(81m^6)^{\frac{1}{2}}$

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Write each expression in radical form.

1) $7^{\frac{1}{2}}$

$\sqrt{7}$

2) $4^{\frac{4}{3}}$

$(\sqrt[3]{4})^4$

3) $2^{\frac{5}{3}}$

$(\sqrt[3]{2})^5$

4) $7^{\frac{4}{3}}$

$(\sqrt[3]{7})^4$

5) $6^{\frac{3}{2}}$

$(\sqrt{6})^3$

6) $2^{\frac{1}{6}}$

$\sqrt[6]{2}$

Write each expression in exponential form.

7) $(\sqrt{10})^3$

$10^{\frac{3}{2}}$

8) $\sqrt[6]{2}$

$2^{\frac{1}{6}}$

9) $(\sqrt[4]{2})^5$

$2^{\frac{5}{4}}$

10) $(\sqrt[4]{5})^5$

$5^{\frac{5}{4}}$

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

$2^{\frac{1}{3}}$

12) $\sqrt[6]{10}$

$10^{\frac{1}{6}}$

Write each expression in radical form.

13) $(5x)^{-\frac{5}{4}}$

$\frac{1}{(\sqrt[4]{5x})^5}$

14) $(5x)^{-\frac{1}{2}}$

$\frac{1}{\sqrt{5x}}$

15) $(10n)^{\frac{3}{2}}$

$(\sqrt{10n})^3$

16) $a^{\frac{6}{5}}$

$(\sqrt[5]{a})^6$

$$17) (6v)^{1.5}$$
$$(\sqrt{6v})^3$$

$$18) m^{-\frac{1}{2}}$$
$$\frac{1}{\sqrt{m}}$$

Write each expression in exponential form.

$$19) (\sqrt[4]{m})^3$$
$$m^{\frac{3}{4}}$$

$$20) (\sqrt[3]{6x})^4$$
$$(6x)^{\frac{4}{3}}$$

$$21) \sqrt[4]{v}$$
$$v^{\frac{1}{4}}$$

$$22) \sqrt{6p}$$
$$(6p)^{\frac{1}{2}}$$

$$23) (\sqrt[3]{3a})^4$$
$$(3a)^{\frac{4}{3}}$$

$$24) \frac{1}{(\sqrt{3k})^5}$$
$$(3k)^{-\frac{5}{2}}$$

Simplify.

$$25) 9^{\frac{1}{2}}$$
$$3$$

$$26) 343^{-\frac{4}{3}}$$
$$\frac{1}{2401}$$

$$27) 1000000^{\frac{1}{6}}$$
$$10$$

$$28) 36^{\frac{3}{2}}$$
$$216$$

$$29) (x^6)^{\frac{1}{2}}$$
$$x^3$$

$$30) (9n^4)^{\frac{1}{2}}$$
$$3n^2$$

$$31) (64n^{12})^{-\frac{1}{6}}$$
$$\frac{1}{2n^2}$$

$$32) (81m^6)^{\frac{1}{2}}$$
$$9m^3$$