

## Rational Exponents

Date \_\_\_\_\_

**Write each expression in radical form.**

1)  $(10r)^{\frac{5}{4}}$

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

2)  $(5b)^{\frac{5}{4}}$

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

3)  $b^{-\frac{6}{5}}$

$\frac{1}{(\sqrt[5]{b})^6}$

4)  $(10n)^{-\frac{1}{4}}$

$\frac{1}{\sqrt[4]{10n}}$

**Write each expression in exponential form.**

5)  $(\sqrt[4]{2k})^3$

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

6)  $(\sqrt{x})^5$

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

7)  $\frac{1}{(\sqrt[4]{2x})^7}$

$(2x)^{-\frac{7}{4}}$

8)  $(\sqrt[5]{b})^8$

$b^{\frac{8}{5}}$

**Simplify.**

9)  $(9b^6)^{\frac{1}{2}}$

$3b^3$

10)  $(a^8)^{\frac{3}{2}}$

$a^{12}$

$$11) (27r^6)^{\frac{2}{3}}$$
$$9r^4$$

$$12) (100000b^{15})^{\frac{2}{5}}$$
$$100b^6$$

$$13) (p^9)^{\frac{1}{3}}$$
$$p^3$$

$$14) (625x^4)^{\frac{3}{4}}$$
$$125x^3$$

$$15) (x^6)^{\frac{1}{2}}$$
$$x^3$$

$$16) (64r^4)^{-\frac{3}{2}}$$
$$\frac{1}{512r^6}$$

$$17) (100000r^{10})^{\frac{2}{5}}$$
$$100r^4$$

$$18) (n^6)^{-\frac{1}{3}}$$
$$\frac{1}{n^2}$$

$$19) (16x^{12})^{\frac{1}{4}}$$
$$2x^3$$

$$20) (n^6)^{\frac{3}{2}}$$
$$n^9$$

$$21) (k^{12})^{\frac{1}{4}}$$
$$k^3$$

$$22) (100b^4)^{\frac{3}{2}}$$
$$1000b^6$$

$$23) (27p^9)^{\frac{1}{3}}$$
$$3p^3$$

$$24) (36x^6)^{\frac{3}{2}}$$
$$216x^9$$