

Name: _____ Key _____ Hr: _____

Section 1.4 Exponents in Radical Form or Rational Form

Write the following expressions in radical form.

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

$\sqrt{7}$

2. $5^{\frac{3}{4}}$

$\sqrt[4]{5^3}$

3. $4x^{\frac{3}{2}}$

$4\sqrt{x^3}$

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

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

5. $6v^{1.5}$

$6\sqrt{v^3}$

6. $(10n)^{\frac{3}{4}}$

$\sqrt[4]{10n^3}$

7. $8y^{\frac{3}{7}}$

$8\sqrt[7]{y^3}$

Write the following expressions in exponential form.

8. $(\sqrt{10x})^3$

$(10x)^{\frac{3}{2}}$

9. $(\sqrt[5]{3})^4$

$3^{\frac{4}{5}}$

10. $\sqrt[6]{2}$

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

11. $\sqrt[3]{7p^8}$

$(7p^8)^{\frac{1}{3}}$ or $7^{\frac{1}{3}}p^{\frac{8}{3}}$

12. $(\sqrt[3]{5a})^4$

$(5a)^{\frac{4}{3}}$

13. $\frac{1}{(\sqrt[2]{3k})^5}$

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

14. $\sqrt{5b^5}$

$(5b^5)^{\frac{1}{2}}$ or $5^{\frac{1}{2}}b^{\frac{5}{2}}$

Simplify

15. $\sqrt[6]{64}$

2

16. $\sqrt[3]{125^4}$

625

17. $32^{\frac{2}{5}}$

4

18. $16^{\frac{1}{2}}$

4

Simplify the following expressions; write your answers with positive exponents:

19. $4t^{\frac{1}{2}}u^2 \cdot 3t^{-\frac{1}{2}}u^{\frac{3}{4}}$

$$\frac{12u^{\frac{11}{4}}}{t^4}$$

20. $q^{-\frac{2}{5}}$

$$\frac{1}{q^{\frac{2}{5}}}$$

21. $-2ax^{-\frac{1}{3}}$

$$\frac{-2a}{(x)^{\frac{1}{3}}}$$

22. $\left(\frac{5a^{-\frac{2}{3}}b^5}{10b^2c^{\frac{1}{6}}}\right)^3$

$$\frac{b^9}{8a^2c^{\frac{1}{2}}}$$

Simplify the following expressions with "zero" exponents:

23. -2^0

$$-1$$

24. $(-2)^0$

$$1$$

25. $(-2x)^0$

$$1$$

26. $-2x^0$

$$-2$$