

Name _____
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Date _____
Pre Calculus

Given Radicals

Rewrite the following as radicals

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

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

3. $x^{\frac{5}{6}}$

4. $x^{\frac{1}{3}}$

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

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

1. $x^{\frac{4}{5}}$

8. $x^{\frac{1}{7}}$

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

Rewrite the following using fractional exponents

10. $\sqrt[3]{x^4}$

11. $\sqrt[5]{x^3}$

12. $\sqrt[4]{x^7}$

13. $\sqrt{x^3}$

14. $\sqrt[6]{x^5}$

15. \sqrt{x}

1. $\sqrt[8]{x^3}$

16. $\sqrt[5]{x^3}$

17. $\sqrt[3]{x}$

18. The expression $\sqrt[4]{16x^2y^7}$ is equivalent to

- 1) $2x^{\frac{1}{2}}y^{\frac{7}{4}}$
- 2) $2x^8y^{28}$
- 3) $4x^{\frac{1}{2}}y^{\frac{7}{4}}$
- 4) $4x^8y^{28}$

19. The expression $\sqrt[4]{81x^2y^5}$ is equivalent to

- 1) $3x^{\frac{1}{2}}y^{\frac{5}{4}}$
- 2) $3x^{\frac{1}{2}}y^{\frac{4}{5}}$
- 3) $9xy^{\frac{5}{2}}$
- 4) $9xy^{\frac{2}{5}}$

20. Which expression is equivalent to $(\sqrt{a^2b^{\frac{1}{2}}})^{-1}$?

- (1) $a^{-2}b^{-\frac{1}{2}}$
- (2) $-ab^{\frac{1}{4}}$
- (3) $-ab^2$
- (4) $\frac{1}{ab^{\frac{1}{4}}}$

21. Kenzie believes that for $x \geq 0$, the expression $\left(\sqrt[7]{x^2}\right)\left(\sqrt[5]{x^3}\right)$ is equivalent to $\sqrt[35]{x^6}$. Is she correct? Justify your response algebraically.

22. Justify why $\frac{\sqrt[3]{x^2y^5}}{\sqrt[4]{x^3y^4}}$ is equivalent to $x^{-\frac{1}{12}}y^{\frac{2}{3}}$ using properties of rational exponents, where $x \neq 0$ and $y \neq 0$.

23. For n and $p > 0$, is the expression $\left(p^2n^{\frac{1}{2}}\right)^8\sqrt{p^5n^4}$ equivalent to $p^{18}n^6\sqrt{p}$? Justify your answer.

24. Use the properties of rational exponents to determine the value of y for the equation:

$$\frac{\sqrt[3]{x^8}}{\left(x^4\right)^{\frac{1}{3}}} = x^y, \quad x > 1$$

25. Express the fraction $\frac{2x^{\frac{3}{2}}}{\left(16x^4\right)^{\frac{1}{4}}}$ in simplest radical form.