MCF3M Exponent Laws — Review Sheet (20 Questions)

This worksheet was generated by chatOAME, and AI developed specifically for the Ontario Math Curriculum. It was then reviewed and adjusted by me (Mr. Kempe) before being released to students.

Problems

Recall: Exponent Laws

Product Law: $x^a \cdot x^b = x^{a+b}$

Zero Exponent Law: x^0

Quotient Law: $x^a \div x^b = x^{a-b}$

Negative Exponent Law: $x^{-a} = \frac{1}{x^a}$

Power-to-a-Power Law: $(x^a)^b = x^{ab}$

Rational Exponent Law: $x^{a/b} = \sqrt[b]{x^a}$

1. $2^3 \cdot 2^5$
2. $5^7 \div 5^2$
3. $(3^4)^2$
4. $7^2 x 7^5 \div 7^4$
5. $\frac{4^5}{4^5}$
6. 10^{-3}
7. $x^4 \cdot x^3$
8. $a^9 \div a^{12}$
9. $(x^2)^5$
10. $(3x)^4$
11. $2^4 \cdot 2^{-6}$
12. $(x^5 y^2) \div (x^2 y^7)$
13. $\frac{(2x^3 y^{-2})^2}{4x^2 y}$
14. $(16)^{\frac{1}{2}}$
15. $(27)^{\frac{1}{3}}$
16. $81^{\frac{3}{4}}$
17. $x^{-\frac{3}{2}} \cdot x^{\frac{1}{2}}$
18. $\frac{(x^{\frac{1}{2}} y^{\frac{3}{2}})^2}{x^{\frac{3}{2}} y}$
19. $(\frac{9x^2}{4y^3})^{\frac{1}{2}}$
20. $\frac{(8x^3)^{\frac{2}{3}}}{(x^2)^{\frac{1}{2}}}$

Answer Key

1. 2^8
2. 5^5
3. 3^8
4. 7^3
5. $4^0 = 1$
6. $\frac{1}{10^3}$
7. x^7
8. $a^{-3} = \frac{1}{a^3}$
9. x^{10}
10. $81x^4$
11. $2^{-2} = \frac{1}{2^2} = \frac{1}{4}$
12. $x^3 y^{-5} = \frac{x^3}{y^5}$
13. $\frac{x^4}{y^5}$
14. $\sqrt{16} = 4$
15. $\sqrt[3]{27} = 3$
16. $81^{\frac{3}{4}} = \left(\sqrt[4]{81}\right)^3 = 3^3 = 27$
17. $x^{-1} = \frac{1}{x}$
18. $x^{-\frac{1}{2}} y^2 = \frac{y^2}{\sqrt{x}}$
19. $\frac{3x}{2\sqrt{y^3}}$
20. $= 4x$