

Integral Value Exponents

Simplify each expression. Write your final answer using positive exponents only.

1. 3^{-2}

2. 2^{-4}

3. 7^{-2}

4. $(-2)^{-5}$

5. $(4^3)^{-2}$

6. $(5^8)(5^{-3})$

7. $(2^{-3})(2^5)$

8. $\frac{1}{2^{-3}}$

9. $\left(\frac{1}{3}\right)^{-3}$

10. $\left(\frac{2}{3}\right)^{-2}$

11. $\left(\frac{3}{4}\right)^{-3}$

12. $\left(\frac{3}{10}\right)^{-3}$

13. $\left(-\frac{3}{2}\right)^{-3}$

14. $\left(\frac{2^4}{2^6}\right)^{-3}$

15. $\left(\frac{8}{10}\right)^{-3}$

16. $\left(\frac{6^4}{6^4}\right)^{-3}$

17. $\left(\frac{3}{10}\right)^{-4}$

18. $\left(\frac{8}{10}\right)^{-2} \left(\frac{8}{10}\right)^{-4}$

19. $\left(\left(\frac{6}{10}\right)^3 \left(\frac{6}{10}\right)^3\right)^{-5}$

20. $\left(\left(\frac{3}{4}\right)^{-2} \left(\frac{3}{4}\right)^{-2}\right)^{-2}$

Simplify each expression. Write your final answer using positive exponents only.

21. x^{-3}

29. $\frac{x^5}{x^{-3}}$

22. $2x^{-2}$

30. $\frac{1}{x^2y^{-6}}$

23. $-2x^{-3}y^{-4}$

31. $\frac{(2x)^3}{(2x)^{-2}}$

24. $(2x^{-4})^3$

32. $\frac{8x^1}{x^{-3}}$

25. $(x^7x^{-2})^{-2}$

33. $\frac{(2^1y^1)^2}{(3^1y^1)^{-6}}$

26. $(x^1y^4)^{-3}$

34. $\left(\frac{x^4}{x^{-4}}\right)^{-3}$

27. $(x^3y^2)(x^2y^{-4})$

28. $(x^{-1}y^{-2})(x^{-2}y^{-3})$

35. $\left(\frac{x^{-7}y^7}{x^{-9}y^{10}}\right)^{-5}$

Identify the Errors & Correct the Statement

Each solution contains an error. Identify the first incorrect step, explain the error, and correct the solution from that point onward. Write the final answer using positive exponents only.

Step 1: $\left(\frac{x^{-2}}{4y^3}\right)^{-2}$

Step 2: $= \left(\frac{4y^3}{x^2}\right)^2$

Step 3: $= \frac{4^2y^{3 \cdot 2}}{x^{2 \cdot 2}}$

Step 4: $= \frac{16y^6}{x^4}$

Identify the Errors & Correct the Statement

Each solution contains an error. Identify the first incorrect step, explain the error, and correct the solution from that point onward. Write the final answer using positive exponents only.

Step 1: $\frac{(x^{-3}y^2)^{-4}}{(x^2y^{-3})^2}$

Step 2: $= (x^{-5}y^5)^{-6}$

Step 3: $= x^{30}y^{30}$

Step 4: $= (xy)^{30}$

Step 1: $\left(x^{\frac{1}{2}}y^{-\frac{3}{2}}\right)^{\frac{1}{2}} \cdot \left(x^{-\frac{1}{4}}y^{\frac{1}{2}}\right)^{-1}$

Step 2: $= x^1y^{-1}x^{-\frac{5}{4}}y^{-\frac{1}{2}}$

Step 3: $= x^{1-\frac{5}{4}}y^{-1-\frac{1}{2}}$

Step 4: $= x^{-\frac{1}{4}}y^{-\frac{3}{2}}$

Step 5: $= \frac{1}{x^{\frac{1}{4}}y^{\frac{3}{2}}}$

Step 1: $\frac{10x^{-5}y^3}{2x^2y^{-2}}$

Step 2: $= \frac{10}{2} \cdot \frac{x^{-5}}{x^2} \cdot \frac{y^{-3}}{y^{-2}}$

Step 3: $= 5 \cdot x^{-5-2} \cdot y^{-3--2}$

Step 4: $= 5 \cdot x^{-7} \cdot y^{-1}$

Step 5: $= 5 \cdot \frac{1}{x^7} \cdot \frac{1}{y^1}$

Step 6: $= \frac{5}{x^7y^1}$