

C7L3 Notes

More Multiplication Properties of Exponents

Simplify. Use positive exponents.

1. $(n^5)^3$
 $(n^5)(n^5)(n^5)$
 n^{15}

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

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

4. $m(m^{-3})^{-5}$
 $m(m^{15})$
 m^{16}

5. $(x^{\frac{3}{5}})^5 y^4$
 $x^3 y^4$

6. $(m^4)^{\frac{1}{8}}(n^5)^0$
 $m^{\frac{1}{2}}(1)$
 $m^{\frac{1}{2}}$

7. $(a^3)^{-4}(a^3)^{-2}$
 a^{-12}, a^{-6}
 a^{-18}
 $\frac{1}{a^{18}}$

8. $(4n^{-2})^{-3}$
 $4^{-3} n^6$
 $\frac{n^6}{4^3}$
 $\frac{n^6}{64}$

9. $(4n^{-3})^{-2}$

$$\begin{array}{r} 4^{-2} n^6 \\ \hline n^6 \\ \hline 4^2 \\ \hline n^6 \\ \hline 16 \end{array}$$

10. $(2n^{\frac{1}{3}})^{-6}$

$$\begin{array}{r} 2^{-6} n^{-2} \\ \hline 1 \\ \hline 2^6 n^2 \\ \hline 1 \\ \hline 64 n^2 \end{array}$$

11. $(m^{\frac{2}{5}} n)^{10}$

$$m^4 n^{10}$$

12. $(2x^{-3})^4 (x^2 y^6)^3$

$$\begin{array}{r} 2^4 x^{-12} x^6 y^{18} \\ 16 x^{-6} y^{18} \\ \hline 16 y^{18} \\ \hline x^6 \end{array}$$

13. $(ab^5)^{-2} (ab^2)^{-5}$

$$\begin{array}{r} a^{-2} b^{-10} a^{-5} b^{10} \\ a^{-7} b^0 \\ \hline 1 \\ \hline a^7 \end{array}$$

14. $(3m^2 n^6)^{-2} (m^6 n^{-3})^2$

$$\begin{array}{r} 3^{-2} m^{-4} n^{-12} m^{12} n^{-6} \\ 3^{-2} m^8 n^{-18} \\ \hline m^8 \\ \hline 3^2 n^{18} \\ \hline m^8 \\ \hline 9 n^{18} \end{array}$$

Complete the equation.

15. $(x^3)^\square = x^{12}$

$$3(\square) = 12$$

$$\square = 4$$

16. $(n^5)^\square = n^1$

$$5\square = 1$$

$$\square = \frac{1}{5}$$

17. $(x^\square)^{\frac{1}{4}} = x^{12}$

$$\square\left(\frac{1}{4}\right) = 12$$

$$\square = 48$$

18. $(x^{-5})^\square = x^{\frac{1}{4}}$

$$-5\square = \frac{1}{4}$$

$$\square = \frac{-1}{20}$$

19. $(2a^4b^\square)^3 = 8a^{12}$

$$(2a^4b^\square)^3 = 8a^{12}b^0$$

$$\square(3) = 0$$

$$\square = 0$$

20. $(x^5y^7)^\square = \frac{1}{x^5y^7}$

$$(x^5y^7)^\square = x^{-5}y^{-7}$$

$$\square = -1$$