

Review of Exponent Rules & Their Use in Operations
 (Simplify or perform the indicated operation.)

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1. $x^4 + x^4 = 2x^4$ Add \rightarrow Keep exp.

2. $x^4 \cdot x^4 = x^8$ Mult. \rightarrow Add exp.

3. $(x^4)^4 = x^{16}$ Power \rightarrow Mult. exp.

4. $\left[\frac{x^4}{x} \right] = x^3$ Div. \rightarrow Sub. exp.

$\left[\frac{x}{x^4} \right] = \frac{1}{x^3}$ (smaller from larger)

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1) $(5a^7b^4)(-3a^2b^{10})$

$-15a^9b^{14}$

2) $(5a^{-7}b^4)(-3a^{-2}b^{10})$

$-15a^{-9}b^{14}$

$$\frac{-15b^{14}}{a^9}$$

3) $(9m^0n^7)^{-2}$

$$\frac{1}{(9n^7)^2} = \frac{1}{81n^{14}}$$

$\cancel{(9n^7)^2}$ → 9^2

4) $\frac{(t^6u^4)^2}{tu^{13}}$

$$\frac{t^{12}u^8}{tu^{13}} = \frac{t^{11}}{u^5}$$

$\cancel{t^{12}u^8}$ → t^2
 $\cancel{tu^{13}}$ → u^5

5) $(7km)^2$

$$7^2 \rightarrow \underline{49k^2m^2}$$

6) $(7k - 5)^2$

$$\underline{(7k - 5)(7k - 5)}$$

$$49k^2 - 35k - 35k + 25$$

$$\underline{49k^2 - 70k + 25}$$

7) $\left(\frac{2x^7y}{5z^4}\right)^{-3}$

$$\left(\frac{5z^4}{2^1x^7y^1}\right)^3 = \frac{125z^{12}}{8x^{21}y^3}$$

$\cancel{5z^4}$ → 5^3
 $\cancel{2^1x^7y^1}$ → 2^3

8) $\left(\frac{5^10x^6y^3z}{12^24xy^{85}}\right)^2$

$$\left(\frac{5^1x^5z^1}{12^1y^5}\right)^2 = \frac{25x^{10}z^2}{144y^{10}}$$

$\cancel{5^1x^5z^1}$ → 5^2
 $\cancel{12^1y^5}$ → 12^2

9) $(7k - m)^2$

$$\underline{(7k - m)(7k - m)}$$

$$49k^2 - 7km - 7km + m^2$$

$$\underline{49k^2 - 14km + m^2}$$

10) $\frac{15n^9 + 10n^7 - 5n^2}{5n^2}$

$$3\underline{\frac{15n^9}{5n^2}} + \underline{\frac{10n^5}{5n^2}} - \underline{\frac{5n^2}{5n^2}}$$

$$\underline{3n^7 + 2n^5 - 1}$$

11)

$$(7y + 10) - (3y - 4)$$

$$- 3y + 4$$

$$\begin{array}{r} 7y + 10 \\ - 3y + 4 \\ \hline 4y + 14 \end{array}$$

12)

$$(8x^6 - 9x^5 + 17) - (3x^6 + 5x^5 - 6)$$

$$- 3x^6 - 5x^5 + 6$$

$$\begin{array}{r} 8x^6 - 9x^5 + 17 \\ - 3x^6 - 5x^5 + 6 \\ \hline 5x^6 - 14x^5 + 23 \end{array}$$

13) Write the number in scientific notation:

$$0.0005207$$

$$5.207 \times 10^{-4}$$

14) Write the number in standard form:

$$9.013 \times 10^5$$

$$901300.$$

$$901,300$$

15)

$$(7y + 10)(3y - 4)$$

$$21y^2 - 28y + 30y - 40$$

$$21y^2 + 2y - 40$$

16)

$$(2x - 5)(4x^2 + 6x - 7)$$

$$\begin{array}{r} 8x^3 + 12x^2 - 14x \\ - 20x^2 - 30x + 35 \\ \hline 8x^3 - 8x^2 - 44x + 35 \end{array}$$

17)

$$\begin{array}{r} -4^2 + (-9)^2 \\ 4 \cdot 4 \quad (-9)(-9) \\ -16 + 81 \\ 65 \end{array}$$

$$\frac{81}{16}$$

$$(-13)^0 - 5(7)^0$$

$$1 - 5 \cdot 1$$

$$1 - 5$$

$$-4$$

18)

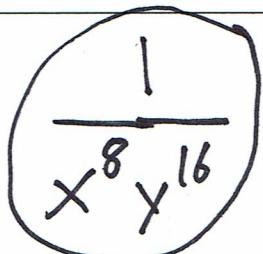
$$2r^{-3} = \frac{2}{r^3}$$

19)

$$(2r)^{-3} = \frac{1}{(2r)^3} = \frac{1}{8r^3}$$

21)

$$\left(\frac{x^4 y^0}{x^0 y^{-8}} \right)^{-2} = \frac{x^{-8}}{y^{16}} = \frac{1}{x^8 y^{16}}$$



22)

$$\left(\frac{x^{-13} y^{-7}}{x^{-10} y^{-8}} \right)^5 = \left(\frac{x^{10} y^8}{x^{13} y^7} \right)^5 = \left(\frac{y^1}{x^3} \right)^5 = \frac{y^5}{x^{15}}$$

23)

$$\left(\frac{m^4 n^2}{m^{14} n^{-8}} \right)^0 = 1$$