

Exponent Rules day 2

Simplify. Your answer should contain only positive exponents.

1) $x^{-1}y^4$

$$\boxed{\frac{y^4}{x}}$$

2) xy^{-1}

$$\boxed{\frac{x}{y}}$$

3) $\frac{3m^{-1}n^4}{2m^0n^3}$

$$\boxed{\frac{3n}{2m}}$$

4) $\frac{4x^2y^{-2}}{x^0}$

$$\boxed{\frac{4x^2}{y^2}}$$

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

$$\boxed{\frac{2y^5}{x}}$$

6) $\frac{3x^3y^4 \cdot 3y^4}{3yx^3}$

$$\frac{9x^3y^8}{3x^3y} = \boxed{3y^7}$$

7) $\frac{x^2y^0}{4xy^4 \cdot 2x^4y^2} \cdot \frac{x^2}{8x^5y^6} = \boxed{\frac{1}{8x^3y^6}}$

8) $\frac{4x^3 \cdot 3x^4}{2x^2y^2} = \frac{12x^7}{2x^2y^2} = \boxed{\frac{6x^5}{y^2}}$

9) $\frac{3ba^0 \cdot a^3}{4a^{-2}b^3} \cdot \frac{3a^3b}{4a^{-2}b^3} = \boxed{\frac{3a^5}{4b^2}}$

10) $\frac{2m^2n^{-1} \cdot 2m^3n^3}{m^{-1}} \cdot \frac{4m^5n^2}{m^{-1}} = \boxed{4m^6n^2}$

11) $\frac{4ab \cdot a^{-1}b^{-4}}{3a^4b^0} \cdot \frac{4b^{-3}}{3a^4} = \boxed{\frac{4}{3a^4b^3}}$

12) $\frac{2u^2}{4uv^4 \cdot 4vu^{-2}} \cdot \frac{2u^2}{16u^{-1}v^3} = \boxed{\frac{u^3}{8v^5}}$

13) $\frac{(2v^2)^0}{u^2v^4} \cdot \boxed{\frac{1}{u^2v^4}}$

14) $\left(\frac{2xy}{(2x^4y^2)^3}\right)^4 \cdot \left(\frac{2xy}{8x^{12}y^6}\right)^4 = \left(\frac{1}{4x^{11}y^5}\right)^4$
$$\boxed{\frac{1}{256x^{44}y^{20}}}$$

$$15) \frac{2x^4}{(x^4y^2)^3} \cdot \frac{2x^4}{x^{12}y^6} = \boxed{\frac{2}{x^8y^6}}$$

$$16) \left(\frac{(2u^{-1})^3}{u^0}\right)^3 (8u^{-3})^3 = 512u^{-9}$$

$$\boxed{\frac{512}{u^9}}$$

$$17) \left(\frac{(u^3)^3}{2vu^3}\right)^2 \left(\frac{u^9}{2vu^3}\right)^2 = \frac{u^{18}}{4v^2u^6} = \boxed{\frac{u^{12}}{4v^2}}$$

$$18) \frac{2m^3n^{-2}}{(2m^3n^3)^4} \cdot \frac{2m^3n^{-2}}{16m^{12}n^{12}} = \boxed{\frac{1}{8m^9n^{14}}}$$

$$19) \left(\frac{2a^2b^3}{(2a^2b^2)^{-2}}\right)^4 \cdot \frac{(2a^2b^3)(2a^2b^2)^2}{(2a^2b^3)(4a^4b^4)^4}$$

$$(8a^6b^7)^4 = \boxed{4096a^{24}b^{28}}$$

$$20) \frac{u^3v^3 \cdot u^2}{(v^2)^4} \cdot \frac{u^5v^3}{v^8} = \boxed{\frac{u^5}{v^5}}$$

$$21) \frac{(2x^3y^4)^4}{2x^3y^0 \cdot x^3y^3} \cdot \frac{16x^{12}y^{16}}{2x^6y^3} = \boxed{8x^6y^{13}}$$

$$22) \frac{(a^3b^2)^3 \cdot 2ab^4}{a^0b^2} \cdot \frac{a^9b^6 \cdot 2ab^4}{b^2} = \frac{2a^{10}b^{10}}{b^2}$$

$$\boxed{2a^{10}b^8}$$

$$23) \frac{a^{-1}b^4 \cdot 2a^{-4}b^{-2}}{(2ab^0)^3} \cdot \frac{2a^{-5}b^2}{8a^3} = \boxed{\frac{b^2}{4a^8}}$$

$$24) \frac{2x^4y^0}{(2x^{-3}y^3)^{-1} \cdot x^4y^2} \cdot \frac{2x^4 \cdot 2x^{-3}y^3}{x^4y^2} = \frac{4xy^3}{x^4y^2}$$

$$\boxed{\frac{4y}{x^3}}$$

$$25) \frac{(2a^3b^{-1})^2}{2b^3 \cdot 2b^4} \cdot \frac{4a^6b^{-2}}{4b^7} = \boxed{\frac{a^6}{b^9}}$$

$$26) \left(\frac{x^4y^0 \cdot 2x^4y^4}{2x^3}\right)^0$$

$$\boxed{1}$$

Divide using synthetic division.

$$27) (x^3 - 7x^2 + 10x - 33) \div (x - 6)$$

6	1	-7	10	-33	$x^2 - x + 4 - \frac{9}{x-6}$
		6	-6	24	
	1	-1	4	-9	

$$28) (3n^3 + 39n^2 + 80n - 104) \div (n + 10)$$

-10	3	39	80	-104	$3n^2 + 9n - 10 - \frac{4}{n+10}$
		-30	-90	100	
	3	9	-10	-4	

$$29) (4x^3 + 7x^2 - 45x - 44) \div (x + 4)$$

-4	4	7	-45	-44	$4x^2 - 9x - 9 - \frac{8}{x+4}$
		-16	+36	36	
	4	-9	-9	-8	

$$30) (b^3 - 2b^2 - 4b + 8) \div (b + 1)$$

-1	1	-2	-4	8	$b^2 - 3b - 1 + \frac{9}{b+1}$
		-1	3	1	
	1	-3	-1	9	