

Simplifying Radicals & Exponents Practice

Simplify.

1) $\sqrt{200n^4}$ $10n^2\sqrt{2}$

2) $\sqrt{27n^3}$ $3n\sqrt{3n}$

3) $\sqrt{150}$ $5\sqrt{6}$

4) $\sqrt{75xy^4z^3}$ $5y^2z\sqrt{3xz}$

5) $2\sqrt{45ab^3c^4}$ $6bc^2\sqrt{5ab}$

6) $-5\sqrt{112}$ $-20\sqrt{7}$

7) $7\sqrt[6]{448}$ $14\sqrt[6]{7}$

8) $3\sqrt[6]{192}$ $6\sqrt[6]{3}$

9) $2\sqrt[4]{96m^2n^3p^6}$ $4p\sqrt[4]{6m^2n^3p^2}$

10) $4\sqrt[3]{192}$ $16\sqrt[3]{3}$

11) $-5\sqrt[3]{448x^4y^6z^7}$ $-20xy^2z^2\sqrt[3]{7xz}$

12) $-3\sqrt[5]{256x^4y^7z^2}$ $-6y\sqrt[5]{8x^4y^2z^2}$

13) $5\sqrt[5]{224x^4y^8}$ $10y\sqrt[5]{7x^4y^3}$

14) $-2\sqrt[3]{448m^4n^6p^7}$ $-8mn^2p^2\sqrt[3]{7mp}$

15) $-\sqrt[7]{-384x^7y^9}$ $2xy\sqrt[7]{3y^2}$

16) $-3\sqrt[3]{189}$ $-9\sqrt[3]{7}$

17) $4\sqrt[5]{224a^2b^3}$ $8\sqrt[5]{7a^2b^3}$

18) $-7\sqrt[3]{-625h^7jk^7}$ $35h^2k^2\sqrt[3]{5hjk}$

Simplify. Your answer should contain only positive exponents.

$$19) \frac{(2n^2)^2 \cdot (n^{-1})^3}{(n^3)^4} = \frac{4n^4 \cdot n^{-3}}{n^{12}} = \frac{4n}{n^{12}} = \boxed{\frac{4}{n^{11}}}$$

$$20) \left(\frac{x}{2x^{-2} \cdot x^{-4}} \right)^3 = \left(\frac{x}{2x^{-6}} \right)^3 = \left(\frac{x \cdot x^6}{2} \right)^3 = \left(\frac{x^7}{2} \right)^3 = \boxed{\frac{x^{21}}{8}}$$

$$21) \frac{(2x^4)^4}{yx^4 \cdot -x^3y^4} = \frac{16x^{16}}{-x^7y^5} = \boxed{-\frac{16x^9}{y^5}}$$

$$22) \frac{(-x^4y^3)^{-2}}{y^2 \cdot -2x^4y^{-2}} = \frac{1}{-2x^4 \cdot (-x^4y^3)^2} = \frac{1}{-2x^4 \cdot x^8y^6} = \boxed{-\frac{1}{2x^{12}y^6}}$$

$$23) \left(\frac{+2xy^0}{+x^{-4} \cdot 2x^{-4}} \right)^4 = \left(\frac{x \cdot x^4 \cdot x^4}{1} \right)^4 = (x^9)^4 = \boxed{x^{36}}$$

$$24) \frac{(-x^{-4}y^4)^{-4} \cdot 2x^{-4}}{(2yx^2 \cdot -2x^{-3}y^{-4})^{-2}} = \frac{2 \cdot (2yx^2 \cdot -2x^{-3}y^{-4})^2}{x^4 \cdot (-x^{-4}y^4)^4} = \frac{2 \cdot (-4x^{-1}y^{-3})^2}{x^4 \cdot x^{-16}y^{16}} = \frac{2 \cdot 16x^{-2}y^{-6}}{x^{-12}y^{16}} = \frac{32x^{12}}{x^2y^{16}y^6} = \boxed{\frac{32x^{10}}{y^{22}}}$$

$$25) \left(\frac{pm^{-2} \cdot -2qm^{-2}p^0}{m^0p^{-3}q^2} \right)^4 = \left(\frac{-2m^{-4}pq}{p^{-3}q^2} \right)^4 = \left(\frac{2pp^3q}{m^4q^2} \right)^4 = \left(\frac{2p^4}{m^4q} \right)^4 = \boxed{\frac{16p^{16}}{m^{16}q^4}}$$

$$26) \frac{2x^2y^4 \cdot zy^{-1}}{(z^2)^3} = \frac{2x^2y^4z}{yz^6} = \boxed{\frac{2x^2y^3}{z^5}}$$

$$27) -\frac{x^4y^2z^{-4}}{2x^3y^2z \cdot (x^{-1}y^3z^3)^3} = -\frac{x^4y^2}{2x^3y^2x^{-3}y^9z^9} = -\frac{x^4y^2}{2y^11z^9} = \boxed{-\frac{x^4}{2y^9z^9}}$$

$$28) -\frac{2x^{-4}y^3z^3}{(-xy^2z^0)^0 \cdot 2x^{-1}y^{-2}} = -\frac{2xy^3y^2z^3}{2x^4} = \boxed{-\frac{y^5z^3}{x^3}}$$

Simplify.

$$29) (36x^6)^{\frac{3}{2}} = (6x^3)^3 = \boxed{216x^9}$$

$$30) (100b^6)^{\frac{1}{2}} = \boxed{10b^3}$$