

Review of Exponents and Radicals WS

Simplify. Your answer should contain only positive exponents.

1) $3yx^2 \cdot 2x^3y^2 = 6x^5y^3$

2) $2u^{-2}v^4 \cdot 3u = 6u^{-1}v^4 = \frac{6v^4}{u}$

3) $2xy^2 \cdot 2x^4y^3 = 4x^5y^5$

4) $x^4y^{-3} \cdot 3x^2y^4 = 3x^6y$

5) $4u^2v^{-2} \cdot 4vu^{-1} = 16u^1v^{-1} = \frac{16u}{v}$

6) $x \cdot 3x^{-4}y^2 = 3x^{-3}y^2 = \frac{3y^2}{x^3}$

7) $(3x^3y^4)^2 = 3^2x^6y^8 = 9x^6y^8$

8) $(a^4b^{-2})^{-4} = a^{-16}b^8 = \frac{b^8}{a^{16}}$

9) $(3m^{-1}n^3)^3 = 3^3m^{-3}n^9 = \frac{27n^9}{m^3}$

10) $(3x^3y^{-1})^2 = 3^2x^6y^{-2} = \frac{9x^6}{y^2}$

11) $(2ab^{-4})^{-1} = 2^{-1}a^{-1}b^4 = \frac{b^4}{2a}$

12) $(4m^{-3}n^4)^2 = 4^2m^{-6}n^8 = \frac{16n^8}{m^6}$

13) $\frac{2xy^3}{3x^3y^2} = \frac{2y}{3x^2}$

14) $\frac{uv^0}{2u^{-2}v^{-1}} = \frac{u^1 \cdot u^2v^1}{2} = \frac{u^3v}{2}$

15) $\frac{3xy^{-1}}{4x^{-3}y^4} = \frac{3 \cdot x \cdot x^3}{4 \cdot y \cdot y^4} = \frac{3x^4}{4y^5}$

16) $\left(\frac{u^{-4}v^5}{u^4v^3}\right)^{-6} = \left(\frac{v^5}{u^4 \cdot u^4 \cdot v^3}\right)^{-6} = \left(\frac{v^2}{u^8}\right)^{-6}$
 $= \left(\frac{u^8}{v^2}\right)^6 = \boxed{\frac{u^{48}}{v^{12}}}$

$$17) \frac{x^2 y^{-4}}{(x^{-5} y^3)^2} = \frac{x^2}{y^4 x^{-10} y^6}$$

$$= \frac{x^2 x^{10}}{y^{10}} = \boxed{\frac{x^{12}}{y^{10}}}$$

$$18) \left(\frac{y^6}{x^{-6} y^3} \right)^5 = \left(\frac{y^3 \cdot x^6}{1} \right)^5$$

$$= \boxed{y^{15} x^{30}}$$

Simplify. Write your answer in radical form.

$$19) \sqrt{64p} = 8\sqrt{p}$$

$$20) \sqrt[3]{81m^3} = 3m\sqrt[3]{3}$$

$$21) \sqrt{144k^4} = 12k^2$$

$$22) \sqrt{320n^2} = 8n\sqrt{5}$$

$$23) \sqrt{18v^2} = 3v\sqrt{2}$$

$$24) \sqrt{512n} = 16\sqrt{2n}$$

$$25) \sqrt{63x^2} = 3x\sqrt{7}$$

$$26) \sqrt[3]{16p^8} = 2p^2\sqrt[3]{2p^2}$$

$$27) \sqrt{80r^4} = 4r^2\sqrt{5}$$

$$28) \sqrt{192r} = 8\sqrt{3r}$$

$$29) \sqrt[3]{192x^6 y^5} = 4x^2 y \sqrt[3]{3y^2}$$

$$30) \sqrt{448m^2 n^4} = 8mn^2\sqrt{7}$$

$$31) \sqrt[5]{-160u^7 v^2} = -2u\sqrt[5]{5u^2 v^2}$$

$$32) \sqrt[3]{64x^2 y^8} = 4y^2\sqrt[3]{x^2 y^2}$$

$$33) \sqrt{8ab} = 2\sqrt{2ab}$$

$$34) 6\sqrt{54x^4 y^4} = 18x^2 y^2\sqrt{6}$$

$$35) 7\sqrt{12x^2y^4} = 14xy^2\sqrt{3}$$

$$36) 5\sqrt[3]{54u^3v^3} = 15uv\sqrt[3]{2}$$

$$37) -2\sqrt{112x^3y^2} = -8xy\sqrt{7x}$$

$$38) -8\sqrt{63xy^3} = -24y\sqrt{7xy}$$

Simplify. Write your answer in exponential form.

$$39) (625a^8)^{\frac{1}{4}} = 5a^{8/4} = \boxed{5a^2}$$

$$40) (64x^2)^{\frac{1}{2}} = 64^{1/2} x^{2/2} \\ = \boxed{8x}$$

$$41) (36r^4)^{\frac{3}{2}} = 36^{3/2} r^{12/2} \\ = \boxed{216r^6}$$

$$42) (216a^3)^{\frac{1}{3}} = 216^{1/3} a^{3/3} \\ = \boxed{6a}$$

$$43) (16p^4)^{\frac{3}{2}} = 16^{3/2} p^{12/2} \\ = 4^3 p^6 \\ = \boxed{64p^6}$$

$$44) (81x^6)^{\frac{3}{2}} = 81^{3/2} x^{18/2} \\ = 9^3 x^9 \\ = \boxed{729x^9}$$

$$45) (343x^3)^{\frac{1}{3}} = 343^{1/3} x^{3/3} \\ = \boxed{7x}$$

$$46) (25b^2)^{\frac{3}{2}} = 25^{3/2} b^{6/2} \\ = 5^3 b^3 \\ = \boxed{125b^3}$$

$$47) (125n^3)^{\frac{5}{3}} = 125^{5/3} n^{15/3} \\ = 5^5 n^5 \\ = \boxed{3125n^5}$$

$$48) (32v^{10})^{\frac{3}{5}} = 32^{3/5} v^{30/5} \\ = 2^3 v^6 \\ = \boxed{8v^6}$$