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Algebra II

Given Radicals

Express the following without using radicals:

1. $\sqrt[2]{x^2y^5}$

$(x^2y^5)^{\frac{1}{2}}$

$xy^{\frac{5}{2}}$

2. $\sqrt[3]{27x^6y^8}$

$(27x^6y^8)^{\frac{1}{3}}$

$27^{\frac{1}{3}}x^2y^{\frac{8}{3}}$

$3x^2y^{\frac{8}{3}}$

3. $(\sqrt[2]{25x^3y^4})^3$

$(25x^3y^4)^{\frac{3}{2}}$

$25^{\frac{3}{2}}x^{\frac{9}{2}}y^6$

$125x^{\frac{9}{2}}y^6$

4. $(\sqrt[4]{16x^5y^8})^{-1}$

$(16x^5y^8)^{-\frac{1}{4}}$

$16^{-\frac{1}{4}}x^{-\frac{5}{4}}y^{-2}$

$\frac{1}{1}$

$\frac{1}{16^{\frac{1}{4}}x^{\frac{5}{4}}y^2}$

$\frac{1}{2x^{\frac{5}{4}}y^2}$

5. $\sqrt[3]{\frac{a^6b^9}{-64}}$

$\left(\frac{a^6b^9}{-64}\right)^{\frac{1}{3}}$ $\frac{a^2b^3}{-64^{\frac{1}{3}}} = \frac{a^2b^3}{-4}$

6. $\sqrt[4]{\frac{x^7y^{12}}{81}}$

$\left(\frac{x^7y^{12}}{81}\right)^{\frac{1}{4}}$ $\frac{x^{\frac{7}{4}}y^3}{81^{\frac{1}{4}}}$ $\frac{x^{\frac{7}{4}}y^3}{3}$

7. $\sqrt[3]{\frac{x^{-6}y^{12}}{27z^{-9}}}$

$\left(\frac{x^{-6}y^{12}}{27z^{-9}}\right)^{\frac{1}{3}}$

$\frac{x^{-2}y^4}{27^{\frac{1}{3}}z^{-3}}$

$\frac{y^4z^3}{x^2 27^{\frac{1}{3}}}$

$\frac{y^4z^3}{3x^2}$

8. $\sqrt[2]{\frac{64m^{-2}n^5}{25z^{-8}}}$

$\left(\frac{64m^{-2}n^5}{25z^{-8}}\right)^{\frac{1}{2}}$

$\frac{64^{\frac{1}{2}}m^{-1}n^{\frac{5}{2}}}{25^{\frac{1}{2}}z^{-4}}$

$\frac{64^{\frac{1}{2}}n^{\frac{5}{2}}z^4}{m\cdot 25^{\frac{1}{2}}}$

$\frac{8n^{\frac{5}{2}}z^4}{5m}$

9. $\sqrt[5]{\frac{x^{-10}y^{7}}{z^{-8}}}$

$\frac{y^{\frac{7}{5}}z^{\frac{8}{5}}}{x^{2}}$

$\left(\frac{x^{-10}y^{7}}{z^{-8}}\right)^{\frac{1}{5}}$

$\frac{x^{-2}y^{\frac{7}{5}}}{z^{-\frac{8}{5}}}$

10. $\sqrt[4]{\frac{x^{-12}z^{7}}{16y^{-5}}}$

$\left(\frac{x^{-12}z^{7}}{16y^{-5}}\right)^{\frac{1}{4}}$

$\frac{x^{-3}z^{\frac{7}{4}}}{16^{\frac{1}{4}}y^{-\frac{5}{4}}}$

$\frac{z^{\frac{7}{4}}y^{\frac{5}{4}}}{x^{3}16^{\frac{1}{4}}}$

$\frac{y^{\frac{5}{4}}z^{\frac{7}{4}}}{2x^{3}}$

11. The expression $\sqrt[4]{16x^{2}y^{7}}$ is equivalent to

1) $2x^{\frac{1}{2}}y^{\frac{7}{4}}$
2) $2x^{8}y^{28}$
3) $4x^{\frac{1}{2}}y^{\frac{7}{4}}$
4) $4x^{8}y^{28}$

$(16x^{2}y^{7})^{\frac{1}{4}}$

$16^{\frac{1}{4}}x^{\frac{1}{2}}y^{\frac{7}{4}}$

$2x^{\frac{1}{2}}y^{\frac{7}{4}}$

12. The expression $\sqrt[4]{81x^{2}y^{5}}$ is equivalent to

1) $3x^{\frac{1}{2}}y^{\frac{5}{4}}$
2) $3x^{\frac{1}{2}}y^{\frac{4}{5}}$
3) $9xy^{\frac{5}{2}}$
4) $9xy^{\frac{2}{5}}$

$(81x^{2}y^{5})^{\frac{1}{4}}$

$81^{\frac{1}{4}}x^{\frac{1}{2}}y^{\frac{5}{4}}$

$3x^{\frac{1}{2}}y^{\frac{5}{4}}$

13. Which expression is equivalent to $(\sqrt[3]{a^{2}b^{\frac{1}{2}}})^{-1}$?

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

$(a^{2}b^{\frac{1}{2}})^{-\frac{1}{2}}$

$\frac{a^{-1}b^{-\frac{1}{4}}}{1}$

$\frac{1}{a^{1}b^{\frac{1}{4}}}$