

MCR 3U

SIMPLIFYING ALGEBRAIC EXPRESSIONS involving EXPONENTS

TO SIMPLIFY EXPRESSIONS WITH EXPONENTS...

- Convert any radicals to fractional exponents – recall the **index** of the radical is the **denominator** of the rational exponent
- Convert decimal exponents to fractional exponents
- Use BEDMAS rules to simplify
- Use exponent rules of 4.2 – generally, use RULE #3 first, then RULES #1 & 2
- DO NOT deal with negative exponents until all above steps/rules have been cleared.

Simplify. Express answers with positive exponents.

1.
$$\frac{(x^{-3})^4(x^{-1})^{-3}(x^{-1})}{x^{-4}}$$

2.
$$\frac{w^3(xw^{-2})^4}{(x^{-3})^2(xw)^{-2}}$$

3.
$$\frac{12a^{-2}b^3}{(3a^3b)^2}$$

4.
$$\left(\frac{(xy^{-2})^{-2}(x^3y)^{-1}}{y^{-3}(x^{-2}y^4)^2}\right)^{-1}$$

5.
$$(x^{-\frac{2}{3}})^{0.5}(x^5)^{0.25}$$

6.
$$\frac{\sqrt[3]{64x^{-6}}}{\sqrt{64x^{-8}}}$$

7.
$$\left(\frac{\sqrt[3]{27a^{-2}b^{12}}}{\sqrt[4]{256a^4b^{-2}}}\right)^{0.4}$$

8.
$$\left(\frac{(n^{-\frac{1}{3}})^{1.5}}{\sqrt[5]{1024n^{-1.25}}}\right)^{\frac{2}{3}}$$

9.
$$\frac{\sqrt{(16a^3bc^{-1})^3}}{\sqrt[3]{a^2b^{-2}}}$$

10.
$$\frac{\sqrt{x(x^{2n+1})}}{\sqrt[3]{x^{3n}}}$$