PRE–AP ALGEBRA 2

3A.1 CLASSWORK

1) Simplify each expression. Express your answers with only positive exponents.

a)

$$\frac{3^2x^7(yz^2)^7}{3^{-2}x^3y^{-7}z^{12}}$$

b)

$$\frac{16x^{-1}\left(\sqrt[4]{y^3z^2}\right)^4}{4x^3y^3z^{-2}}$$

a) $\dfrac{3^2x^7(yz^2)^7}{3^{-2}x^7y^{-7}z^{12}} = \dfrac{3^2x^7y^7z^{14}}{3^{-2}x^3y^{-7}z^{12}} =$

$= 3^{2-(-2)}x^{7-3}y^{7-(-7)}z^{14-12} =$

$= 3^4x^4y^{14}z^2 = 81x^4y^{14}z^2$

b) $\dfrac{16x^{-1}\left(\sqrt[4]{y^3}z^2\right)^4}{4x^3y^3z^{-2}} =$

$= \dfrac{4^2x^{-1}\left(y^{3/4}z^2\right)^4}{4x^3y^3z^{-2}} = \dfrac{4^2x^{-1}y^3z^8}{4x^3y^3z^{-2}} = 4^{2-1}x^{-1-3}y^{3-3}z^{8-(-2)} =$

$= 4x^{-4}y^0z^{10} = \dfrac{4z^{10}}{x^4}$

2) Write each expression as a single radical.

a)

$$\frac{\sqrt[3]{x}}{\sqrt[5]{x^4}}$$

b)

$$\sqrt[3]{x^2}\cdot\sqrt[5]{x^4}$$

a) $\dfrac{\sqrt[3]{x}}{\sqrt[5]{x^4}} = \dfrac{x^{1/3}}{x^{4/5}} = x^{\frac{1}{3}-\frac{4}{5}} = x^{-7/15} =$

$= \dfrac{1}{x^{7/15}} = \dfrac{1}{\sqrt[15]{x^7}}$

b) $\sqrt[3]{x^2}\cdot\sqrt[5]{x^4} = x^{\frac{2}{3}}\cdot x^{\frac{4}{5}} =$

$= x^{\frac{2}{3}+\frac{4}{5}} = x^{\frac{22}{15}} = \sqrt[15]{x^{22}}$