

(C1-1.6a) Name:

Homework Questions 6 – Laws of Indices for Rational Exponents

1. Write the following indices as a fraction

a) 4^{-2}

$$\frac{1}{16}$$

b) 3^{-4}

$$\frac{1}{81}$$

c) $\left(\frac{a^3}{y^2}\right)^{-3}$

$$\frac{y^6}{a^9}$$

d) $\left(\frac{3x^5y^2}{2z^4}\right)^{-2}$

$$\frac{4z^8}{9x^{10}y^4}$$

2. Write the following indices as roots

a) $\frac{2}{4^3}$

$$\sqrt[3]{4^2}$$

b) $\frac{5}{3^4}$

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

c) $5^{-\frac{2}{3}}$

$$\frac{1}{\sqrt[3]{5^2}}$$

d) $6^{-\frac{6}{5}}$

$$\frac{1}{\sqrt[5]{6^6}}$$

3. Write the following roots as indices

a) $\sqrt[4]{x^5}$

$$\frac{5}{x^4}$$

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

$$2x^{-\frac{4}{3}}$$

c) $\frac{1}{\sqrt[10]{y^4}}$

$$y^{-\frac{4}{10}}$$

d) $\sqrt[3]{x}$

$$x^{\frac{1}{3}}$$

4. Evaluate the following

a) $16^{\frac{1}{4}}$

$$2$$

b) $64^{\frac{1}{3}}$

$$4$$

c) $8^{\frac{2}{3}}$

$$4$$

d) $49^{\frac{3}{2}}$

$$343$$

e) $81^{\frac{1}{4}}$

$$3$$

f) $\left(\frac{1}{25}\right)^{-\frac{1}{2}}$

$$5$$

g) $\left(\frac{36}{49}\right)^{-\frac{3}{2}}$

$$\frac{243}{216}$$

h) $\left(\frac{125}{8}\right)^{-\frac{2}{3}}$

$$\frac{4}{25}$$