

## Simplifying Algebraic Indices

Write as a single power of  $x$ :

- (a)  $\sqrt{x^3}$  (b)  $(\sqrt{x})^3$   
(c)  $\sqrt[3]{x^2}$  (d)  $\sqrt[4]{x}$   
(e)  $(\sqrt[3]{x})^4$  (f)  $\sqrt{x^5}$

(a)  $x^{3/2}$  (b)  $x^{3/2}$   
(c)  $x^{2/3}$  (d)  $x^{1/4}$   
(e)  $x^{4/3}$  (f)  $x^{5/2}$

Write as a single power of  $x$ :

- (a)  $\frac{1}{\sqrt[3]{x}}$  (b)  $\left(\frac{1}{\sqrt[3]{x}}\right)^2$   
(c)  $\frac{1}{\sqrt{x^3}}$  (d)  $\left(\frac{1}{\sqrt{x}}\right)^3$   
(e)  $\left(\frac{1}{\sqrt[3]{x}}\right)^5$  (f)  $\frac{1}{\sqrt[2]{x^7}}$

(a)  $x^{-1/3}$  (b)  $x^{-2/3}$   
(c)  $x^{-3/2}$  (d)  $x^{-3/2}$   
(e)  $x^{-5/3}$  (f)  $x^{-7/2}$

Write as a single power of  $x$ :

- (a)  $x^2 \times \sqrt{x}$  (b)  $\sqrt[3]{x} \times x$   
(c)  $\frac{x^4}{\sqrt{x}}$  (d)  $\frac{\sqrt[3]{x}}{x}$   
(e)  $\sqrt{\frac{1}{x^5}}$  (f)  $\frac{1}{x\sqrt{x}}$

(a)  $x^{5/2}$  (b)  $x^{4/3}$   
(c)  $x^{7/2}$  (d)  $x^{-2/3}$   
(e)  $x^{-5/2}$  (f)  $x^{-3/2}$

(a) Given that

$$\frac{y^4 \times \sqrt{y}}{\sqrt{y^5}} = y^a$$

find the value of  $a$ .

(b) Given that

$$\frac{1}{\sqrt[3]{y^2}} \times (y\sqrt{y})^4 = y^b$$

find the value of  $b$ .

(c) Given that

$$\left(\sqrt[2]{y^3}\right)^3 \times \frac{1}{y^c} = \left(y^2 \times \sqrt[4]{y^3}\right)^{-2}$$

find the value of  $c$ .

(a)  $a = 2$

(b)  $b = \frac{16}{3}$

(c)  $c = 10$