**Simplifying Algebraic Indices**

Write as a single power of $x$:

(a) $\sqrt{x^{3}}$ (b) $\left(\sqrt{x}\right)^{3}$

(c) $\sqrt[3]{x^{2}}$ (d) $\sqrt[4]{x}$

(e) $\left(\sqrt[3]{x}\right)^{4}$ (f) $\sqrt{x^{5}}$

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) $\frac{1}{\sqrt[2]{x^{7}}}$

Write as a single power of $x$:

(a) $x^{2}×\sqrt{x}$ (b) $\sqrt[3]{x}×x$

(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) Given that

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

 find the value of $a$.

(b) Given that

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

 find the value of $b$.

(c) Given that

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

find the value of $c$.

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