Indices Essential Practice

Skill: Simplifying algebraic expressions involving indices

Questions

Attempt these questions independently showing full and clear solutions. Check each answer as you go.

1. Express each of the following in the form a^n where n is a constant to be determined:

(a) $a^2 \times a^5$ (b) $\frac{a^6}{a^4}$ (c) $(a^3)^5$

(d) $a^2 \times \sqrt{a}$ (e) $\frac{1}{a\sqrt{a}}$ (f) $\left(\sqrt{a}\right)^8$

(g) $\sqrt{a^{-6} \times a^{10}}$ (h) $\frac{1}{a^{-3}}$ (i) $\frac{a^7}{a^{-6}}$

(j) $\frac{a^3}{\sqrt{a^{-4}}}$ (k) $\sqrt{a^{-6}}$ (l) $\left(\frac{1}{a^{-5}}\right)^3$

2. Express each of the following in the form x^n where n is a constant to be determined:

(a) $\left(\sqrt{x}\right)^{10}$ (b) $\left(\sqrt[4]{x}\right)^{40}$ (c) $\frac{1}{\left(\sqrt[3]{x}\right)^{-9}}$

(d) $\frac{x^{-5}}{\left(\sqrt[5]{x}\right)^{-40}}$ (e) $\frac{x^{-1}}{\left(\sqrt[7]{x}\right)^{-28}}$

3. Express each of the following in the form y^n where n is a constant to be determined:

(a) $(y)^{100}$ (b) $\left(\sqrt[5]{y}\right)^{200}$ (c) $\frac{y}{\left(\sqrt[3]{y}\right)^{-30}}$

(d) $\frac{y^4}{\left(\sqrt[4]{y}\right)^{-12}}$ (e) $\frac{y^{-7}}{\left(\sqrt[8]{y}\right)^{-800}}$