Sec 7-2

Rationalizing Denominators

To rationalize a denomintor means to remove any irrational number from the denominator.

Simplify. Rationalize the denominator.

$$\frac{13}{\sqrt{7de^5}} \cdot \frac{\sqrt{7de^5}}{\sqrt{7de^5}} = \frac{13\sqrt{7de^5}}{7de^5}$$

$$\frac{13e^2\sqrt{7de}}{7de^5}$$

$$\frac{13\sqrt{7de}}{7de^3}$$

Simplify. Rationalize the denominator.

$$\frac{5}{\sqrt{12m^5n^6p^{13}}} \cdot \frac{\sqrt{12m^5n^6p^{13}}}{\sqrt{12m^5n^6p^{13}}} = \frac{5\sqrt{12m^5n^6p^{13}}}{12m^5n^6p^{13}}$$

$$\frac{5 \cdot 10m^2n^3p^6\sqrt{3mp}}{12m^5n^6p^{13}} = \frac{5\sqrt{3mp}}{6m^3n^3p^7}$$

Simplify. Rationalize the denominator.

$$\frac{8QR^2}{\sqrt{6Q^7R^3}} \cdot \frac{\sqrt{6Q^7R^3}}{\sqrt{6Q^7R^3}} = \frac{8QR^2\sqrt{6Q^7R^3}}{6Q^7R^3}$$

$$= \frac{8Q^4R^3\sqrt{6QR}}{6Q^7R^3}$$

$$\sqrt{6Q^7R^3} = \sqrt{6Q^6 \cdot Q \cdot R^2 \cdot R}$$

$$= Q^3R\sqrt{6QR}$$

$$\frac{4\sqrt{6QR}}{3Q^3}$$

Simplify. Rationalize the denominator.

$$\frac{11}{\sqrt[3]{4x^7y^4z}} \cdot \frac{\sqrt[3]{2x^2y^2z^2}}{\sqrt[3]{2x^2y^2z^2}} = \frac{11\sqrt[3]{2x^2y^2z^2}}{2x^3y^2z}$$

$2 \cdot 2$

$$\sqrt[3]{8x^9y^6z^3}$$

Simplify. Rationalize the denominator.

$$\frac{20a^8b^5}{\sqrt[3]{5a^{11}b^{16}}} \cdot \frac{\sqrt[3]{5^2ab^2}}{\sqrt[3]{5^2ab^2}} = \frac{20a^8b^5\sqrt[3]{25ab^2}}{5a^4b^6}$$

$$\sqrt[3]{5^3a^{12}b^{18}}$$

$$\frac{4a^4\sqrt[3]{25ab^2}}{b}$$