Simplify each. Use absolute value symbols when needed.

$\sqrt[4]{16m^{12}n^{25}} =$

$= 2|m^3| n^6 \sqrt[4]{n}$

$\sqrt[5]{3072R^{21}S^{34}} =$

$3072 = 4^5 \cdot 3$

$= 4R^4 S^6 \sqrt[5]{3R S^4}$

Simplify each. Use absolute value symbols when needed.

$\sqrt[3]{-27e^{12}f^{17}g^{19}} =$

$-3e^4 f^5 g^6 \sqrt[3]{f^2 g}$

$\sqrt[8]{x^{40}y^{21}z^{15}} =$

$|x^5| y^2 |z^1| \sqrt[8]{y^5 z^7}$

Simplify. Assume all variables are positive.

This means regardless of the index NO absolute value is needed.

$\sqrt[4]{m^{12}n^{23}p^6} = m^3 n^5 p^1 \sqrt{n^3 p^2}$

Which of these are rational numbers?

Rational numbers are any number that can be written as a fraction.

1. $12.8 = \frac{128}{10}$ Yes

2. $\sqrt{25} = 5 = \frac{5}{1}$ Yes

3. $\sqrt{3}$ No, this is Irrational

4. $\frac{19}{7}$ Yes, it's already a fraction!

Sec 7-2: Rationalizing Denominators of Radical Expressions

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

Rationalize each denominator and simplify. Assume all variables are positive.

1. $\frac{2}{\sqrt{11}} \cdot \frac{\sqrt{11}}{\sqrt{11}} = \frac{2\sqrt{11}}{11}$

2. $\frac{10}{\sqrt{6w}} \cdot \frac{\sqrt{6w}}{\sqrt{6w}} = \frac{10\sqrt{6w}}{6w} = \frac{5\sqrt{6w}}{3w}$

Rationalize each denominator and simplify.

$\frac{7}{\sqrt{8}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{\sqrt{16}} = \frac{7\sqrt{2}}{4}$

$\frac{10}{\sqrt{12}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{10\sqrt{3}}{\sqrt{36}} = \frac{10\sqrt{3}}{6} = \frac{5\sqrt{3}}{3}$

$\frac{1}{\sqrt[3]{25}} \cdot \frac{\sqrt[3]{5}}{\sqrt[3]{5}} = \frac{\sqrt[3]{5}}{\sqrt[3]{5^3}} = \frac{\sqrt[3]{5}}{5}$ ($25 = 5^2$)

Rationalize each denominator and simplify.

$\frac{3}{\sqrt[3]{7}} \cdot \frac{\sqrt[3]{7^2}}{\sqrt[3]{7^2}} = \frac{3\sqrt[3]{7^2}}{7}$, $\sqrt[3]{7} = \sqrt[3]{7^3}$

$\frac{15}{\sqrt[5]{36}} \cdot \frac{\sqrt[5]{6^3}}{\sqrt[5]{6^3}} = \frac{15\sqrt[5]{6^3}}{\sqrt[5]{6^5}} = \frac{15\sqrt[5]{6^3}}{6} = \frac{5\sqrt[5]{6^3}}{2}$ ($36 = 6^2$)