

Which of these is a rational number? #s 1, 2, 4

1. $12.8 = \frac{128}{10}$ 2. $\sqrt{25} = \frac{5}{1}$

3. $\sqrt{3}$ 4. $\frac{19}{7}$

What do we call #3? Irrational

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

Rationalize each denominator

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

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

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

Rationalize each denominator

$$\frac{1}{\sqrt[3]{ab^2}} \cdot \frac{\sqrt[3]{a^2b}}{\sqrt[3]{a^2b}} = \frac{\sqrt[3]{a^2b}}{\sqrt[3]{a^3b^3}} = \frac{\sqrt[3]{a^2b}}{ab}$$

Rationalize the denominator

$$\frac{9}{\sqrt[4]{c^2d^3e}} \cdot \frac{\sqrt[4]{c^2de^3}}{\sqrt[4]{c^2de^3}} = \frac{9\sqrt[4]{c^2de^3}}{\sqrt[4]{c^4d^4e^4}} = \frac{9\sqrt[4]{c^2de^3}}{cde}$$

Rationalize the denominator

$$\frac{9}{\sqrt{8j^7k^{13}}} \cdot \frac{\sqrt{2jk}}{\sqrt{2jk}} = \frac{9\sqrt{2jk}}{\sqrt{16j^8k^{14}}} = \boxed{\frac{9\sqrt{2jk}}{4j^4k^7}}$$

Simplify. Rationalize the denominator.

$$\frac{5}{\sqrt{12m^5n^6p^{13}}} \cdot \frac{\sqrt{3mp}}{\sqrt{3mp}} = \frac{5\sqrt{3mp}}{\sqrt{36m^6n^6p^{14}}} = \boxed{\frac{5\sqrt{3mp}}{6m^3n^3p^7}}$$

Rationalize the denominator

$$\frac{12a}{\sqrt[4]{6a^3b^5c^1}} \cdot \frac{\sqrt[4]{6^3a^1b^3c^3}}{\sqrt[4]{6^3a^1b^3c^3}} = \frac{12a\sqrt[4]{6^3ab^3c^3}}{6ab^2c}$$

$$\sqrt[4]{6^4a^4b^8c^4} = \boxed{\frac{2\sqrt[4]{6^3ab^3c^3}}{b^2c}}$$