

10.3

Rationalizing

A)

- 1) You can't have a radical in the denominator
 Multiply by it to make a whole number both

$$\frac{2\sqrt{8}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{48}}{\sqrt{36}} \xrightarrow{\text{top \& bottom}} = \frac{2\sqrt{48}}{6}$$

- 2) Simplify the numerator (if needed)

$$\frac{2\sqrt{48}}{6} \xrightarrow{4\sqrt{2}} \frac{2 \cdot 4\sqrt{2}}{6} = \frac{8\sqrt{2}}{6}$$

- 3) Simplify the fraction (Do not touch the radicand).

$$\frac{4\sqrt{2}}{3\cancel{6}} \quad \boxed{\frac{4\sqrt{2}}{3}}$$

B)

- 1) You have to rationalize the conjugate (in parentheses).

$$\text{conjugate} \rightarrow \frac{4\sqrt{2}}{(6+\sqrt{6})} \cdot \frac{(6-\sqrt{6})}{(6-\sqrt{6})} = \frac{\quad}{36-6} = \frac{\quad}{30}$$

square, square, MINUS!

- 2) Distribute

$$4\sqrt{2} \cdot 6 - \sqrt{6} = 24\sqrt{2} - 4\sqrt{12}$$

- 3) Simplify

$$\frac{24\sqrt{2} - 4\sqrt{12}}{30} \xrightarrow{2\sqrt{3}} \frac{12\sqrt{2} - 4\sqrt{3}}{15}$$

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Rationalizing (cont'd)

C.

More fractions

1. Rationalize the fraction $\frac{2\sqrt{24}}{\sqrt{2}} = \frac{\sqrt{3} \cdot \sqrt{2}}{\sqrt{2}} = \frac{\sqrt{6}}{2}$

2. Simplify any radical $\frac{2\sqrt{24}}{2} = \frac{2\sqrt{6}}{2}$

$$\frac{2 \cdot 2\sqrt{6}}{2} = \frac{4\sqrt{6}}{2}$$

3. Do they have the same denominator in order to add or subtract? Change it.

Whole #s do not touch!

$$\frac{2 \cdot 4\sqrt{6}}{2} = \frac{8\sqrt{6}}{2}$$

$$\frac{8\sqrt{6}}{2}$$

$$\frac{1\sqrt{6}}{2}$$

$$= \frac{7\sqrt{6}}{2}$$