

DIVIDING RADICALS

Note Title

2/22/2012

PROPERTY OF DIVIDING RADICALS

$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$$

EX
$$\frac{\sqrt{24}}{\sqrt{6}} = \sqrt{\frac{24}{6}} = \sqrt{4} = 2$$

EX
$$\frac{6\sqrt{40}}{2\sqrt{10}} = 3\sqrt{\frac{40}{10}} = 3\sqrt{4} = 6$$

$$\frac{6\sqrt{4}\sqrt{10}}{2\sqrt{10}} = \frac{12}{2} = 6$$

$$\begin{aligned} \text{IE} \quad \frac{\sqrt{36}}{\sqrt{2}} &= \sqrt{\frac{36}{2}} = \sqrt{18} = \sqrt{9} \sqrt{2} = 3\sqrt{2} \end{aligned}$$

$$\begin{aligned} \rightarrow \frac{6}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} &= \frac{6\sqrt{2}}{\sqrt{4}} = \frac{6\sqrt{2}}{2} = 3\sqrt{2} \end{aligned}$$

RATIONALIZING THE DENOMINATOR

- WE DO THIS TO ELIMINATE ANY RADICALS IN THE DENOMINATOR

- WE SIMPLY MULTIPLY THE TOP AND BOTTOM BY THE RADICAL IN THE DENOMINATOR

$$\text{THE ARITHMETIC} \quad \frac{3\sqrt{2}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{6}}{\sqrt{9}} = \frac{3\sqrt{6}}{3} = \sqrt{6}$$

$$\text{THE} \quad \frac{3\sqrt{7}}{2\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{35}}{2\sqrt{25}} = \frac{3\sqrt{35}}{10}$$

RECALL: DIFFERENCE OF SQUARES

$$(x+y)(x-y) \quad \text{VS.} \quad (x+y)(x+y)$$

$$x^2 - \cancel{xy} + \cancel{xy} - y^2 \quad x^2 + \cancel{xy} + \cancel{xy} + y^2$$

$$x^2 - y^2 \quad x^2 + 2xy + y^2$$

$$\begin{aligned} \text{Ans} & \frac{(5\sqrt{7}-3)(\sqrt{3}-\sqrt{5})}{(\sqrt{3}+\sqrt{5})} \times \frac{(\sqrt{3}+\sqrt{5})}{(\sqrt{3}-\sqrt{5})} = \frac{5\sqrt{21}-5\sqrt{35}-3\sqrt{3}+3\sqrt{5}}{\sqrt{9}-\sqrt{5}+\sqrt{5}-\sqrt{25}} \\ & \frac{5\sqrt{21}-5\sqrt{35}-3\sqrt{3}+3\sqrt{5}}{-2} \end{aligned}$$

$$\frac{5\sqrt{21}-5\sqrt{35}-3\sqrt{3}+3\sqrt{5}}{3-5} = \frac{5\sqrt{21}-5\sqrt{35}-3\sqrt{3}+3\sqrt{5}}{-2}$$

$$\text{Ans} \frac{(3\sqrt{2}+\sqrt{3})(2\sqrt{3}-\sqrt{2})}{(2\sqrt{3}+\sqrt{2})(2\sqrt{3}-\sqrt{2})}$$

$$= \frac{\cancel{6\sqrt{6}} - 3\sqrt{4} + 2\sqrt{9} - \sqrt{6}}{4\sqrt{9} - \sqrt{4}}$$

$$4\sqrt{9} - \sqrt{4}$$

$$= \frac{5\sqrt{6} - \cancel{6} + \cancel{6}}{12 - 2} = \frac{\textcircled{5\sqrt{6}}}{\textcircled{10}} = \boxed{\frac{\sqrt{6}}{2}}$$

H/W

Pa 119

1-7, # 8 All

A, C, E

Pa 126

1-5 A, C, E