

5.2 Multiplying & Dividing Radicals

Multiply coefficients, multiply radicands, simplify.

$$\text{ex) } (2\sqrt{3a})(-5\sqrt{6}) = -10\sqrt{18a} = -10\sqrt{9}\sqrt{2a} \\ = -30\sqrt{2a}$$

$$\text{ex) } 3\sqrt{5}(2\sqrt{7} - 4\sqrt{10}) = 6\sqrt{35} - 12\sqrt{50} = 6\sqrt{35} - 60\sqrt{2}$$

$$\text{ex) } (7\sqrt{3} + 5\sqrt{6})(7\sqrt{3} - 5\sqrt{6}) = 49(3) - 35\sqrt{18} + 35\sqrt{18} - 25(6) \\ = 147 - 150 = -3$$

$$\text{ex) } (4\sqrt{3})(5\sqrt{7}) \text{ cannot be simplified}$$

Dividing

ex) $\frac{8\sqrt{10}}{2\sqrt{2}} = 4\sqrt{5}$ since $\frac{\sqrt{10}}{\sqrt{2}} = \sqrt{\frac{10}{2}}$

ex) $\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$ Rationalize the denominator.

ex) $\frac{4\sqrt{7}}{3-\sqrt{2}} \cdot \frac{(3+\sqrt{2})}{(3+\sqrt{2})} = \frac{12\sqrt{7} + 4\sqrt{14}}{9 + 3\sqrt{2} - 3\sqrt{2} - 2} = \frac{12\sqrt{7} + 4\sqrt{14}}{7}$

ex) $\frac{5}{\sqrt[3]{7}} \cdot \frac{\sqrt[3]{7}}{\sqrt[3]{7}} \cdot \frac{\sqrt[3]{7}}{\sqrt[3]{7}} = \frac{5\sqrt[3]{49}}{7}$

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 #1-5 (x)
 #6-7 (÷)
 #8-11 (rationalize)
 #12-20 (omit 18)
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