

SECTION 10.4 ADDING, SUBTRACTING, AND MULTIPLYING RADICALS

ADDING & SUBTRACTING:

1. Simplify each radical
2. Add or Subtract ONLY LIKE RADICALS

$$9\sqrt{6} - 15\sqrt{6}$$

$$\sqrt{48x^3} + x\sqrt{75x}$$

MULTIPLYING

Distributive Property: _____

FOIL: _____

$$\sqrt{3}(\sqrt{3} - \sqrt{15})$$

$$(5 - \sqrt{a})(2 + 3\sqrt{a})$$

Special Products: _____

Another Special Product: Conjugates

$$(\sqrt{x} - 2\sqrt{y})^2$$

$$(3 - \sqrt{5})(3 + \sqrt{5})$$

ADDING EXAMPLES

$$12n\sqrt{2n} - 14m\sqrt{5m} - 8n\sqrt{2n} + 18m\sqrt{5m}$$

$$4\sqrt{98y^5} - 7\sqrt{128y^5}$$

$$\sqrt{20} + \sqrt{125} - \sqrt{80}$$

$$3\sqrt{216} - \sqrt{108}$$

$$3a^2 \sqrt[3]{500a^4} + 6a \sqrt[3]{108a^7}$$

$$6y \sqrt[4]{81y^5} - 2y \sqrt[4]{16y^6}$$

MULTIPLYING EXAMPLES

$$6\sqrt{2y}(3\sqrt{2y} + 2\sqrt{10y})$$

$$(7 - 3\sqrt{5})(2 - 2\sqrt{10})$$

$$(\sqrt{5} + 2)^2$$

$$(\sqrt{m} - 4\sqrt{n})(2\sqrt{m} - 3\sqrt{n})$$

$$(\sqrt[3]{9} + 5)(\sqrt[3]{9} - 2)$$

$$(\sqrt[3]{r} - 3)(\sqrt[3]{r^2} - 3\sqrt[3]{r} + 9)$$

$$(6\sqrt{x} - \sqrt{y})(6\sqrt{x} + \sqrt{y})$$

OTHER EXAMPLES

$$3\sqrt{3} \cdot \sqrt{18} - 4\sqrt{18} \cdot \sqrt{12}$$

$$\frac{\sqrt{40}}{\sqrt{5}} + \sqrt{50}$$