Radicals: Conjugates

Conjugates

Consider: $a^2 - b^2 = (a+b)(a-b)$

$(a+b)$ and $(a-b)$ are called **conjugates** of one another.

For example, the conjugate of $5 - 2\sqrt{3}$ is $5 + 2\sqrt{3}$

The conjugate of $-3a + \sqrt{7b}$ is $-3a - \sqrt{7b}$

When two <u>conjugates</u> containing radicals are multiplied, the product contains no radicals.

$$(3\sqrt{2x} - 4)(3\sqrt{2x} + 4) = 9\sqrt{4x^2} + 12\sqrt{2x} - 12\sqrt{2x} - 16 \ = \ 9 \cdot 2 - 16 = 18 - 16 = 2$$

$$a^2 - b^2 = (3\sqrt{2x})^2 - 4^2 = \ 9 \cdot 2x - 16 = 18x - 16$$

TRY:

$$(7 - \sqrt{3})(7 + \sqrt{3}) \qquad\qquad (\sqrt{6g} + \sqrt{5})(\sqrt{6g} - \sqrt{5}) \qquad\qquad (3 - 2\sqrt{7})(3 + 2\sqrt{7})$$

© Dr. Susan Harrison