Factoring Difference of Squares Notes

Remember: When given $(x - 2)(x + 2)$

You FOIL and get $x^2 + 2x - 2x - 4$

Then simplify and get $x^2 - 4$ because the middle terms cancel.

Notice, both x^2 and 4 are perfect squares. We will factor using opposite signs so the middle terms cancel.

Example 1: $x^2 - 81$ *81 is a perfect square; we have an x^2 a minus and a perfect square

$(x - 9)(x + 9)$ *9 is the square root of 81

Example 2: $x^2 - 144$ *144 is a perfect square; we have an x^2 a minus and a perfect square

$(x - 12)(x + 12)$ *12 is the square root of 144

Example 3: $4x^2 - 25$ *4 and 25 are both perfect squares

$(2x - 5)(2x + 5)$ *2 is the square root of 4 and 5 is the square root of 25

Example 4: $121x^2 - 169$ *121 and 169 are both perfect squares

$(11x - 13)(11x + 13)$ *11 is the square root of 121 and 13 is the square root of 169

Example 5: $36 - x^4$ * 36 and x^4 are both perfect squares

$(6 - x^2)(6 + x^2)$ *6 is the square root of 36 and x^2 is the square root of x^4

Example 6: $196 - 100x^4$ * 196, 100, and x^4 are all perfect squares

$(14 - 10x^2)(14 + 10x^2)$ *14 is the square root of 196, 10 is the square root of 100, and x^2 is the square root of x^4