THE DIFFERENCE OF SQUARES

Formula: \[ x^2 - y^2 = (x + y)(x - y) \]

This is for two squares that are subtracted. The sum (addition) of two squares is NOT factorable.

Example 1:
\[ x^2 - 9 = 0 \]
\[ x^2 - 3^2 = 0 \]
\[ (x + 3)(x - 3) = 0 \]
\[ x + 3 = 0 \text{ or } x - 3 = 0 \]
\[ x = -3 \text{ or } x = 3 \]

Example 2:
\[ 25x^2 - 81 = 0 \]
\[ (5x)^2 - 9^2 = 0 \]
\[ (5x + 9)(5x - 9) = 0 \]
\[ 5x + 9 = 0 \text{ or } 5x - 9 = 0 \]
\[ 5x = -9 \text{ or } 5x = 9 \]
\[ x = -9/5 \text{ or } x = 9/5 \]

Example 3:
\[ x^2 + 4 = 0 \]

The sum of two squares is not factorable.

Example 4:
\[ x^4 - 81 = 0 \]
\[ x^4 - 9^2 = 0 \]
\[ (x^2)^2 - 9^2 = 0 \]
\[ (x^2 - 9)(x^2 + 9) = 0 \]
\[ (x - 3)(x + 3)(x^2 + 9) = 0 \]
\[ x - 3 = 0 \text{ or } x + 3 = 0 \text{ or } x^2 + 9 = 0 \]
\[ x = 3 \text{ or } x = -3 \]

The revised document contains corrections and clarifications to the original text.