$$z^2 - x^2 + 4xy - 4y^2$$

$$z^2 - (x^2 - 4xy + 4y^2)$$

$$(z)^2 - (x - 2y)^2$$

$$(z + x - 2y)(z - (x - 2y))$$

$$(z + x - 2y)(z - x + 2y)$$