

## The Three Special Products

Certain quadratic expressions occur frequently in the GRE and they can be quickly factorized if you learn to recognize them immediately. You should also know how to distribute them. You need to memorize these equations and they will help you to quickly solve the problem or lead you to the solution. They are known as special products.

$$1) x^2 - y^2 = (x + y)(x - y)$$

$$2) x^2 + 2xy + y^2 = (x + y)(x + y) = (x + y)^2$$

$$3) x^2 - 2xy + y^2 = (x - y)(x - y) = (x - y)^2$$

The first special product  $x^2 - y^2 = (x + y)(x - y)$  is also known as **difference of squares**.

I will leave it as an exercise to distribute the special products to verify the result yourself.

### Numerical Examples

$$1) x^2 - 49 = x^2 - 7^2 = (x + 7)(x - 7)$$

$$2) 25 + 10y + y^2 = 25 + 2 * 5 * y + y^2 = (5 + y)(5 + y) = (5 + y)^2$$

$$3) x^2 - 20x + 100 = x^2 - 2 * x * 10 + 100 = (x - 10)(x - 10) = (x - 10)^2$$