

$$a. (x+1)(x-1) = x^2 - 1$$

base case

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

$$(2)(0) = 0$$

$$0 = 0$$

case inductive

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

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

$$x^2 + 2x = x^2 + 2x$$

$$b. (x-1)^2 = x^2 - 2x + 1$$

base case

~~2x - 2x~~

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

$$0^2 = 1 - 2 + 1$$

$$0 = 0$$

inductive

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

$$x^2 = x^2 + 2x + 1 - 2x - 2 + 1$$

$$x^2 = x^2$$