Square Difference

1) $3 = 2^2 - 1^2$ // $5 = 3^2 - 2^2$ // $8 = 3^2 - 1^2$ // $12 = 4^2 - 2^2$ // $16 = 5^2 - 3^2$

Odd numbers can be written as the difference of two squares in the form: odd ~~(or)~~ is (n)

2)

$$n = \left(\frac{n+1}{2}\right)^2 - \left(\frac{n+1}{2} - 1\right)^2$$

Odd number can be written as $2n+1$ so now it is

$$2n+1 = \left(\frac{2n+2}{2}\right)^2 - \left(\frac{2n+2}{2} - 1\right)^2$$

$$\left(\frac{2n+2}{2}\right)^2 = \frac{4n^2+8n+4}{4} \qquad \left(\frac{2n+2}{2} - 1\right)^2 = \frac{4n^2-4}{4} + 1$$

[redacted]

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

$$2n+1 = 2n+1$$