Difference of Perfect Squares – Continued.

Factor:

Ex 1: $3t^2 - 27$

$= \ldots$ always common factor first, if possible

$= 3(t^2 - 9)$ ← within brackets we have a difference of squares.

$= 3(t-3)(t+3)$

Ex 2: $x^4 - 25x^2$

$= x^2(x^2 - 25)$

$= x^2(x-5)(x+5)$

Ex 3: $t^4 - k^4 = \ldots (?)^2 - (?)^2$

$= \ldots$

$= (t^2)^2 - (k^2)^2$

$= (t^2 - k^2)(t^2 + k^2)$

further factorable!

$= (t-k)(t+k)(t^2+k^2)$

Ex 4:

Remark $a^2 - b^2 = (a-b)(a+b)$

Also a stands for any quantity, as single item/with brackets

b is also in brackets.

$$(a)^2 - (b)^2 = ((a) - (b))((a) + (b))$$

Factor $(x+1)^2 - (x-1)^2$ ← when we say factor, we do not expand (its opposite) unless (exception) within a factor.

$= [(x+1) - (x-1)][(x+1) + (x-1)]$

$= [x + 1 - x + 1][x + 1 + x - 1]$

we expanded within a factor (removed brackets)

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

$= (2)(2x)$

$= 4x$