7.5 Factor Special Polynomials

Review:

1) Factor out the GCF : Always do this 1st !!

2) Factor by Grouping : 4 terms

3) Factor Trinomials ($a=1$) : Find the factors of the Last # & Add up equals the middle # (Easy)

4) Factor Trinomials ($a \neq 1$) : step 1: 2 columns
step 2: Cross multiply & Add = middle #

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5) Factor spcial polynomials :

Special Binomial: difference of 2 squares.

Ex1) $x^2 - 9$ must be minus !!

x^2: square, 9: square

$= (x + 3)(x - 3)$

split the 1st term

$\sqrt{9} = 3$

Ex2) $x^2 - 81y^2 = (x + 9y)(x - 9y)$

$\sqrt{81} = 9$

Ex3) $25x^4 - 49y^4 = (5x^2 + 7y^2)(5x^2 - 7y^2)$

$\sqrt{25} = 5$ $\sqrt{49} = 7$

Ex4) $a^2 \oplus 4$ Prime

↑

Not special !!

Ex5) $27x^4 - 12 = 3(9x^4 - 4)$

Factor

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

$\sqrt{9} = 3$ $\sqrt{4} = 2$

Ex6) $16x^5 - 81x = x(16x^4 - 81)$

Factor

$= x(4x^2 + 9)(4x^2 - 9)$

Factor

$= \boxed{x(4x^2+9)(2x+3)(2x-3)}$

Try This:

1) $9x^2 - 25y^2 = (3x+5y)(3x-5y)$

2) $16 - 49x^2 = (4+7x)(4-7x)$

3) $3x^4 - 3 = 3(x^4 - 1)$

$= 3(x^2+1)(x^2-1)$

$= \boxed{3(x^2+1)(x+1)(x-1)}$