FACTORING

1ST STEP = Pull out Common Factors!

$30x^4 - 42x^2$

$6x^2(5x^2 - 7)$

4 Terms — GROUPING! $\rightarrow$ 2 steps

$(6K^3 + 10K^2 - 27K - 45)$

$2K^2(3K + 5) - 9(3K + 5)$

must be same!

$= (3K + 5)(2K^2 - 9)$

3 Terms — UNFOIL
— 2 binomials

$15p^2 + 14p - 8$

$(5p - 2)(3p + 4)$

$-6p$

$+20p$

$16m^2 + 24m + 9$

$(4m + 3)(4m + 3)$

$12m$

$12m$

$= (4m + 3)^2$

2 TERMS

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

$a^2 + b^2 = $ not possible

$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

$x^2 - 9 = (x + 3)(x - 3)$

$x^2 + 25 = (x + 5)(x + 5)$

not possible

$$a^2 - b^2 = (a-b)(a+b)$$
$$a^2 + b^2 = \text{not possible}$$
$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$
$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$8m^3 + 125$$
$$2^3$$
$$= (2m + 5)(4m^2 - 10m + 25)$$

$$75x^2 - 12$$
$$3(25x^2 - 4) = 3(5x+2)(5x-2)$$

$$b^2 - 5$$
$$= (b + \sqrt{5})(b - \sqrt{5})$$

QUADRATIC FORM (u-substitution)

$x^2 + 2x^1 - 8$

$x^6 + 2x^3 - 8$

$x^{20} - 5x^{10} - 14$

$x^4 + 7x^2 - 44$

$(x^2 - 4)(x^2 + 11)$

$-4x^2$

$+11x^2$

$\boxed{(x+2)(x-2)(x^2+11)}$

$3(n+5)^2 - 2(n+5)^1 - 21$

$= 3 \cdot u^2 - 2 \cdot u - 21$

$(3u + 7)(u - 3)$

$+7u$

$-9u$

$= (3(n+5) + 7)(n+5 - 3)$

$= (3n + 15 + 7)(n + 2)$

$= (3n + 22)(n + 2)$