Factoring

#1 $16\mathbf{x}^3 + 8\mathbf{x}^2 + 4\mathbf{x}'$

$4x'(4x^2+2x'+1)$

#2 $6\mathbf{xy} + 4\mathbf{x} + 15\mathbf{y} + 10$

What do you notice??

$$6xy + 4x + 15y + 10$$

$$2x(3y+2) \quad +5(3y+2)$$

** There is nothing similar amongst all terms!!**

- Notice there is something similar in the first two terms, and in the last two terms.
- Let's group the common terms together, to see if we can do **Factor by Grouping**

$$2x(3y+2) \quad 5(3y+2)$$

Brackets must be the same, to use **Factor by Grouping**!!

$$=(2x+5)(3y+2)$$

Factor by Grouping

#1 $2ax + 3bx + 2ay + 3by$

$x(2a+3b) + y(2a+3b)$

$(x+y)(2a+3b)$

#2 $a^2 - ab + ac - bc$

$a(a-b) + c(a-b)$

$(a+c)(a-b)$

#3 $12\mathbf{xy} - 8\mathbf{x} + 42\mathbf{y} - 28$

$2(6xy - 4x + 21y - 14)$

#4 $\mathbf{bc} - \mathbf{ab} + \mathbf{b}^2 - \mathbf{ac}$

$bc + b^2 - ac - ab$

$b(c+b) - a(c+b)$

$(b-a)(c+b)$