

Tuesday 9-25-18

# Factoring 4 techniques

I.) Always factor out the greatest common factor first.

(ex)  $6x^3 + 15x^2 - 21x$  GCF is  $3x$

$$3x(2x^2 + 5x - 7)$$

(ex)  $6n^3 + 24n^2 + 12n$

GCF is  $6n$

$$6n(n^2 + 4n + 2)$$

(ex)  $a(b-2) + c(b-2)$

GCF:  $(b-2)$

$$(b-2)(a+c)$$

II.) Consider factoring by grouping. (4 terms)

(ex)  $x^3 + 3x^2 + 6x + 18$

① Group terms in pairs

$$(x^3 + 3x^2) + (6x + 18)$$

② Factor out the common factor from each.

$$x^2(x+3) + 6(x+3)$$

③ factor out common binomial

$$(x^2+6)(x+3)$$

(ex)  $2x^3 - 3x^2 + 6x - 9$

$$(2x^3 - 3x^2) + (6x - 9)$$

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

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

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III. Consider the difference of two squares.

ex  $4x^2 - 25$

Are they square terms? yes

$$\sqrt{4x^2} = 2x$$

$$\sqrt{25} = 5$$

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

ex  $16x^2 - 25z^2$

$$\sqrt{16x^2} = 4x$$

$$\sqrt{25z^2} = 5z$$

$$(4x+5z)(4x-5z)$$

ex  $4xy^2 - 4xz^2$

factor out  $4x$

$$4x(y^2 - z^2)$$

$$\sqrt{y^2} = y$$

$$\sqrt{z^2} = z$$

$$4x(y+z)(y-z)$$