

# Factoring

## 0 – Factoring Reference Sheet

Pre-steps:

- 1) Write terms in descending order with respect to one of the variables.
- 2) Make sure lead coefficient is positive.

### Binomial

- 1) Factor out GCF

$$ax \pm ay = a[x \pm y]$$

- 2) [Difference of Two Squares](#)

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

- 3) [Difference/Sum of Two Cubes](#)

$$x^3 \pm a^3 = (x \pm a)(x^2 \mp ax + a^2)$$

### Trinomials

- 1) Factor out GCF

$$ax \pm ay \pm az = a[x \pm y \pm z]$$

- 2) [Perfect Square Trinomial](#)

$$x^2 \pm 2ax + a^2 = (x \pm a)^2$$

- 3) [Split the middle term and factor by grouping.](#)

### Four Terms

- 1) Factor out GCF

$$aw \pm ax \pm ay \pm az = a[w \pm x \pm y \pm z]$$

- 2) [Factor by grouping](#)

# Factoring

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Factor each problem by grouping. Show all work.

#1)  $-2 + x^3 - x^2 + 2x$

#2)  $-192x^2y - 72x^3 + 24rxy + 9rx^2$

Split middle term and factor by grouping.

#3)  $19x + 5x^2 + 12$

#4)  $-16x^2 - 60x + 100$

Factor each using the difference of two squares.

#5)  $200 - 98x^2$

#6)  $49x^2 - 100$

Factor each using the difference or sum of two cubes.

#7)  $1029x^3y - 24y^4$

#8)  $-1 - x^3$

Factor each using perfect square trinomial.

#9)  $10x^2 + 100x + 250$

#10)  $49x^2 - 56x + 16$