

5.11

Using Several Methods of Factoring

GUIDES TO FACTORING COMPLETELY

- 1) Factor out the GCF first
- 2) Look for a difference of squares
$$a^2 - b^2 = (a - b)(a + b)$$
- 3) Look for a perfect square trinomial
$$a^2 + 2ab + b^2 = (a + b)^2 \quad \text{or}$$
$$a^2 - 2ab + b^2 = (a - b)^2$$
- 4) Look for a pair of binomial factors
- 5) If a polynomial has 4 or more terms, look for a way to factor by grouping
- 6) Make sure you can't factor any further
- 7) Check your work!

Factor completely:

1) $8x^3 - 512x =$

2) $3x^3 + 3x^2 - 18x$

Factor completely:

3) $5a^2b^3 + 2a^3b^2 - 3ab^4$

4) $a^2b - 4b + 3a^2 - 12$

Factor completely:

5) $-x^3 + 4xy^2 =$

6) $-12z^3 + 30z^2 + 18z$

Factor completely:

7) $2x^4 - 162$

8) $9x^3 + 108x + 63x^2$

Factor completely:

9) $20 - 60x + 45x^2$

10) $10k^3 + 25k - 35k^2$

Factor completely:

11) $12ab - 3b^2 - 12a^2$

12) $a^3 + a^2b - ab^2 - b^3$