5.6 & 5.7 - Special Factors

Review

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

Factoring a Perfect-Square Trinomial

$A^2 + 2AB + B^2 = (A + B)^2;$

$A^2 - 2AB + B^2 = (A - B)^2$

To Recognize a Perfect-Square Trinomial

- Two terms must be squares, such as A^2 and B^2.
- There must be no minus sign before A^2 or B^2.
- The remaining term must be $2AB$ or its opposite, $-2AB$.

Are a & c perfect squares?
of what? (these are A & B)
Is the middle term $2AB$?

① Factor

a) $x^2 - 14x + 49$

b) $9r^2 + 36rs + 36s^2$

c) $25\alpha^2 - 25\alpha + 4$

d) $25x^2 - 20x + 4$

e) $8n^2 - 40n + 50$

f) $-4y^2 - 144y^8 + 48y^5$

② Factor

a) $x^2 - 81$

b) $16a^4 - 25b^2$

③ Solve

a) $16 = 81r^4$

b) $x^3 + 3x^2 = 9x + 27$

Multiply $(A+B)(A^2-AB+B^2)$

Factoring a Sum or a Difference of Two Cubes

$A^3 + B^3 = (A + B)(A^2 - AB + B^2);$

$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$

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④ Factor

a) $x^3 + 27$

b) $125a^3 - 216b^3$

c) $r^6 - 64$

d) $2y^4 - 16y$

Useful Factoring Facts

Sum of cubes: $A^3 + B^3 = (A + B)(A^2 - AB + B^2)$

Difference of cubes: $A^3 - B^3 = (A - B)(A^2 + AB + B^2)$

Difference of squares: $A^2 - B^2 = (A + B)(A - B)$

There is no formula for factoring a sum of squares.