Factoring Special Cases (Section 2-7)

* Perfect square trinomials: $a^2+2ab+b^2$ OR $a^2-2ab+b^2$
  $= (a+b)^2$ $= (a-b)^2$

↳ you can just factor these like regular trinomials and then write them as a perfect square.

ex: x^2+6x+9 (add/same sign: $9 < 9\cdot1,\ 3\cdot3$)

$(x+3)(x+3)$

$= (x+3)^2$

ex: $v^2-10v+25$ (add/same sign: $25 < 25\cdot1,\ 5\cdot5$)

$(v-5)(v-5)$

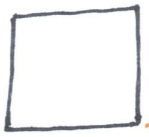
$= (v-5)^2$

ex: $4r^2+36r+81$ (perfect squares)

Try: $(2r+9)(2r+9)$

Does it work? YES!

$= (2r+9)^2$

ex: 

$100r^2-220r+121$ (perfect squares)

Try: $(10r+11)(10r+11)$

Does it work? NO

Try: $(10r-11)(10r-11)$

Does it work? YES

$= (10r-11)^2$

** First Rule of Factoring: Look for a GCF!

ex: $12t^2-48$

GCF: 12

$= 12(t^2-4)$

$= 12(t+2)(t-2)$

ex: $80g^2-45$

GCF: 5

$= 5(16g^2-9)$

$= 5(4g+3)(4g-3)$

* Difference of Two Squares: $a^2-b^2 = (a+b)(a-b)$

ex: v^2-100 (perfect squares ✓; difference!)

$= (v-10)(v+10)$

ex: $81r^2-1$ (perfect squares ✓; difference!)

$= (9r-1)(9r+1)$

ex: $9n^2-400$ perfect squares? ✓ difference? ✓

$(3n-20)(3n+20)$

ex: $25x^2+4$ perfect squares? ✓ difference? NO

∴ unfactorable!