Special Factoring Patterns

Perfect Square Trinomial &

Difference of Squares

are special factoring patterns that have shortcuts so you don't HAVE to use the Criss-cross and/or Box methods to factor completely.

Example 1 Shortcuts for Perfect Square Trinomials

Perfect Square Trinomials

$a^2 - 2ab + b^2 = (a-b)^2$

$a^2 + 2ab + b^2 = (a+b)^2$

Step 1: a must be positive, so if $a<0$, factor out -1.
Step 2: Factor out a GCF if one exists.
Step 3: Multiply the square root of the first and last terms, then double it. Does that match your middle term? If so, it is a PST.
Step 4: If it is a PST, use the shortcut! If not, use another method.

A] $-x^2 + 8x - 16$

B] $x^2 - 13x + 36$

C] $9x^2 + 24x + 16$

D] $-2x^2 + 10x - 8$

E] $4x^2 + 20x + 25$

F] $8x^2 - 24x + 18$

Example 2 Shortcut for Difference of Squares

Difference of Squares

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

Step 1: a must be positive, so if $a<0$, factor out -1.
Step 2: Factor out a GCF if one exists.
Step 3: Are both terms perfect squares and are they being SUBTRACTED? If so, it is a DOS.
Step 4: If it is a DOS, use the shortcut! If not, it does not factor further.

A] $-x^2 + 25$

B] $9x^2 - 81$

C] $4x^2 - 100x$

D] $49x^2 - 1$

E] $75x^2 - 3$

F] $-2x^2 - 72$

Example 3 Solving Equations

$2x^2 - 21x + 12 = 15(x-10)$

ERROR ANALYSIS *(Identify, describe, and correct the errors)*

A] $4x^2 + 25 =$

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

B] $9x^2 - 30x + 16 =$

$(3x-4)^2$

C] $2 - 32x^2 =$

$2(1-16x^2)$

DNF

D] $2x^2 - 24x + 72 =$

$2(x^2-12x+36)$

$(x-6)^2$