Factoring by Grouping

Steps:

1) Split into 2 binomials
2) Factor out GCF of each binomial
3) Write the two new binomials
4) GCF's form one of the new binomials

Example 1:

$(8x^3 + 4x^2) + (10x + 5)$

$4x^2(2x+1) + 5(2x+1)$

$(2x+1)(4x^2+5)$

Example 2:

$(20x^3 - 4x^2) + (15x - 3)$

$4x^2(5x-1) + 3(5x-1)$

$(5x-1)(4x^2+3)$

Example 3:

$(27x^3 + 9x^2) - (24x - 8)$

$9x^2(3x+1) - 8(3x+1)$

$(9x^2 - 8)(3x+1)$

Example 4:

$(8x^3 + 12x^2) + (10x + 15)$

$4x^2(2x+3) + 5(2x+3)$

$(4x^2+5)(2x+3)$