Factoring By Grouping – Basic Technique

Factor the following:

1. $3x(2x + 5) + 2y(2x + 5)$

   $\boxed{(2x+5)(3x+2y)}$

2. $4x(3x - 2) - y(3x - 2)$

   $\boxed{(3x-2)(4x-y)}$

3. $5k(2k - 7) + (2k - 7)$

   $\boxed{(2k-7)(5k+1)}$

4. $ab + 3b + ac + 3c$

   $b(a+3)+c(a+3)$

   $\boxed{(a+3)(b+c)}$

5. $3x^2 - 6x + xz - 2z$

   $3x(x-2)+z(x-2)$

   $\boxed{(x-2)(3x+z)}$

6. $8p^3 + 6p^2 + 12p + 9$

   $2p^2(4p+3)+3(4p+3)$

   $\boxed{(4p+3)(2p^2+3)}$

7. $r^3 - 2r^2 - 2r + 4$

   $r^2(r-2)-2(r-2)$

   $\boxed{(r-2)(r^2-2)}$

8. $2ax + ay - 2bx - by$

   $a(2x+y)-b(2x+y)$

   $\boxed{(2x+y)(a-b)}$

9. $8ef - 2f - 4e + 1$

   $2f(4e-1)-(4e-1)$

   $\boxed{(4e-1)(2f-1)}$

10. $c^3 + cd^2 - 7c^2d - 7d^3$

    $c(c^2+d^2)-7d(c^2+d^2)$

    $\boxed{(c^2+d^2)(c-7d)}$