

## Some Selected Solutions to Advanced Factoring.

$$\textcircled{13} \quad 16(3x-y)^2 - 81y^2 = (4)^2(3x-y)^2 - (9)^2(y)^2$$

$$= [4(3x-y)]^2 - [9y]^2 = [4(3x-y) - 9y][4(3x-y) + 9y]$$

$$= [12x - 4y - 9y][12x - 4y + 9y] = [12x - 13y][12x + 5y]$$

$$\textcircled{17} \quad \underbrace{9a^2 - 12a + 4} - 49b^2 = (3a-2)^2 - 49b^2 = (3a-2)^2 - (7b)^2$$

$$= [(3a-2) - 7b][(3a-2) + 7b] = [3a - 2 - 7b][3a - 2 + 7b]$$

$$\textcircled{18} \quad \underbrace{x^2 + 8xy + 16y^2} - 81 = (x+4y)^2 - (9)^2 = [(x+4y) - 9][(x+4y) + 9]$$

$$= [x + 4y - 9][x + 4y + 9]$$

$$\textcircled{19} \quad 25 - \underbrace{m^2 + 12mn + 36n^2} = 25 - (m^2 + 12mn + 36n^2)$$

$$= 25 - (m+6n)^2 = (5)^2 - (m+6n)^2 = [5 - (m+6n)][5 + (m+6n)]$$

$$= [5 - m - 6n][5 + m + 6n]$$

$$\textcircled{20} \quad a^2 - \underbrace{b^2 + 8bc + 16c^2} = a^2 - (b^2 + 8bc + 16c^2) = a^2 - (b+4c)^2$$

$$= [a - (b+4c)][a + (b+4c)] = [a - b - 4c][a + b + 4c]$$