

8.7] Special Products: Perfect Squares

Recall: $(2x+5)^2 = 4x^2 + 20x + 25$ $(3x-8)^2 = 9x^2 - 48x + 64$

37. $x^2 + 14x + 49$ $\begin{matrix} 1, 49 \\ 7, 7 \end{matrix}$ $= (x+7)^2$ 38. $x^2 - 16x + 64$ $= (x-8)^2$

39. $4a^2 + 12a + 9$
 $= (2a+3)^2$

Method of Decomposition

1a) $2x^2 + 11x + 12$ $\begin{matrix} \otimes 24 \\ \oplus 11 \end{matrix}$

$$\begin{matrix} 1, 24 \\ 2, 12 \\ 3, 8 \\ 4, 6 \end{matrix}$$

$$= \underbrace{2x^2 + 8x}_{2x} + \underbrace{3x + 12}_{+3}$$

$$= \underline{2x(x+4)} + \underline{3(x+4)}$$

$$= (x+4)(2x+3)$$

$$\begin{aligned} &= \underbrace{2x^2 + 3x}_x + \underbrace{8x + 12}_4 \\ &= x(2x+3) + 4(2x+3) \\ &= (2x+3)(x+4) \end{aligned}$$

$$c) \quad 2x^2 + 5x + 2 \quad \begin{matrix} \oplus 4 \\ \oplus 5 \end{matrix} \quad \begin{matrix} 1, 4 \\ 2, 2 \end{matrix}$$

$$= \underline{2x^2 + 4x} + \underline{1x + 2}$$

$2x \qquad +1$

$$= \underline{2x(x+2)} + \underline{1(x+2)}$$

$$= (x+2)(2x+1)$$

$$e) \quad 3x^2 + 4x + 1 \quad \begin{matrix} \oplus 3 \\ \oplus 4 \end{matrix} \quad \begin{matrix} 1, 3 \end{matrix}$$

$$= \underline{3x^2 + 3x} + \underline{1x + 1}$$

$3x \qquad +1$

$$= \underline{3x(x+1)} + \underline{1(x+1)}$$

$$= (x+1)(3x+1)$$

You do #2 ac

$$e) \quad 4x^2 + 19x + 2 \quad \begin{matrix} \oplus 84 \\ \oplus 19 \end{matrix}$$

$$= \underline{4x^2 + 12x} + \underline{7x + 2}$$

$4x \qquad +7$

$$= \underline{4x(x+3)} + \underline{7(x+3)}$$

$$= (x+3)(4x+7)$$

$$\begin{matrix} 1, 84 \\ 2, 42 \\ 3, 28 \\ 4, 21 \\ 6, 14 \\ \underline{7, 12} \end{matrix}$$

HW: pg 289 # 40-42

Back of Outline: 1baf 3baf
2baf