7.3 p435

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

$= (2x + 3)(x + 1)$

(3) $3x^2 + 13x + 4$

$= (3x + 1)(x + 4)$

(5) $2x^2 + 11x + 12$

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

(7) $5y^2 - 16y + 3$

$(5y - 1)(y - 3)$

(9) $3y^2 + y - 4$

$(3y + 4)(y - 1)$

(11) $3x^2 + 13x - 10$

$(3x - 2)(x + 5)$

(13) $3x^2 - 22x + 7$

$(3x - 1)(x - 7)$

(15) $5y^2 - 16y + 3$

$(5y - 1)(y - 3)$

(17) $3x^2 - 17x + 10$

$= (3x - 2)(x - 5)$

(19) $6w^2 - 11w + 4$

$= 6w^2 - 3w - 8w + 4$

$= 3w(2w - 1) - 4(2w - 1)$

$= (3w - 4)(2w - 1)$

(21) $8x^2 + 33x + 4$

$= 8x^2 + 32x + x + 4$

$= 8x(x + 4) + 1(x + 4)$

$= (8x + 1)(x + 4)$

7.0 p 7..

(23) $5x^2 + 33x - 14$ a·c: $5 \cdot -14$, $10 \cdot -7$, $2 \cdot -35$, $-2 \cdot 35$

$= 5x^2 + 35x - 2x - 14$

$= 5x(x+7) - 2(x+7)$

$= \boxed{(5x-2)(x+7)}$

(25) $14y^2 + 15y - 9$ a·c: -126, $-2 \cdot 63$, $-3 \cdot 42$, $-6 \cdot 21$

$14y^2 - 6y + 21y - 9$

$2y(7y-3) + 3(7y-3)$

$= \boxed{(2y+3)(7y-3)}$

(27) $6x^2 + 7x + 3$ a·c: 18, $1 \cdot 18$, $2 \cdot 9$, $3 \cdot 3$

$\boxed{\text{Prime}}$

(29) $25z^2 - 30z + 9$ a·c: 225, $-1 \cdot -225$, $-3 \cdot -75$, $-5 \cdot -45$, $-15 \cdot -15$

$= 25z^2 - 15z - 15z + 9$

$= 5z(5z-3) - 3(5z-3)$

$= \boxed{(5z-3)(5z-3)}$

(31) $15y^2 - y - 2$ a·c: -30, $-1 \cdot 30$, $-2 \cdot 15$, $-3 \cdot 10$, $-5 \cdot 6$, $6 \cdot -5$

$15y^2 - 5y + 6y - 2$

$5y(3y-1) + 2(3y-1)$

$= \boxed{(5y+2)(3y-1)}$

(33) $5x^2 + 2x + 9$ a·c: 45, $1 \cdot 45$, $3 \cdot 15$, $5 \cdot 9$

$\boxed{\text{Prime}}$

$8x^2 - 2x - 1$ a·c: -8, $-1 \cdot 8$, $-2 \cdot 4$, $2 \cdot -4$

(37) $8x^2 - 4x + 2x - 1$

$4x(2x-1) + 1(2x-1)$

$\boxed{(4x-1)(2x-1)}$

(35) $10y^2 + 43y - 9$ a·c: -90, $-1 \cdot 90$, $-2 \cdot 45$, $-3 \cdot 30$, $-5 \cdot 18$

$10y^2 - 2y + 45y - 9$

$= 2y(5y-1) + 9(5y-1)$

$= \boxed{(2y+9)(5y-1)}$

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(38) $8x^2 - 22x + 5$

a·c: 8·5, 4·2·5, 20·2, −2·−20

$= 8x^2 - 2x - 20x + 5$

$= 2x(4x-1) - 5(4x-1)$

$= \boxed{(2x-5)(4x-1)}$

(39) $9y^2 - 9y + 2$

9·2, −3·−6

$= 9y^2 - 6y - 3y + 2$

$= 3y(3y-2) - 1(3y-2)$

$= \boxed{(3y-1)(3y-2)}$

(41) $20x^2 + 27x - 8$

a·c: 1·160, 2·−80, 4·−40, 5·−32, −5·32

$20x^2 - 5x + 32x - 8$

$= 5x(4x-1) + 8(4x-1)$

$= \boxed{(5x+8)(4x-1)}$

(43) $2x^2 + 3xy + y^2$

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

(45) $3x^2 + 5xy + 2y^2$

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

(47) $2x^2 - 9xy + 9y^2$

a·c: 18, 1·18, 2·9, −3·−6

$2x^2 - 6xy - 3xy + 9y^2$

$= 2x(x-3y) - 3y(x-3y)$

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

(49) $6x^2 - 5xy - 6y^2$

a·c: −36, −1·36, −2·18, −3·12, −4·9, 4·−9

$= 6x^2 + 4xy - 9xy - 6y^2$

$= 2x(3x+2y) - 3y(3x+2y)$

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

(51) $15x^2 + 11xy - 14y^2$

a·c = −210: 15·−14, −2·105, −3·70, −5·42, −6·35, −7·30, −10·21

$15x^2 - 10xy + 21xy - 14y^2$

$= 5x(3x-2y) + 7y(3x-2y)$

$= \boxed{(5x+7y)(3x-2y)}$

3.5 7.2

(53) $2a^2 + 7ab + 5b^2$

$= \boxed{(2a+b)(a+3b)}$

(55) $15a^2 - ab - 6b^2$

$a \cdot c = 90$

$3 \cdot 5 \quad -2 \cdot 3$

$-10 \cdot 9$

$15a^2 - 10ab + 9ab - 6b^2$

$= 5a(3a - 2b) + 3b(3a - 2b)$

$= \boxed{(5a + 3b)(3a - 2b)}$

(57) $12x^2 - 25xy + 12y^2$

ac

144

$3 \cdot 4 \cdot 3 \cdot 4$

$-9 \cdot -16$

$= 12x^2 - 9xy - 16xy + 12y^2$

$= 3x(4x - 3y) + 4y(4x - 3y)$

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

(59) $4x^2 + 26x + 30$

$= 2(2x^2 + 13x + 15)$

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

(61) $9x^2 - 6x - 24$

$= 3(3x^2 - 2x - 8)$

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

(63) $4y^2 + 2y - 30$

$= 2(2y^2 + y - 15)$

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

(65) $9y^2 + 33y - 60$

$= 3(3y^2 + 11y - 20)$

$= \boxed{3(3y - 4)(y + 5)}$

(67) $3x^3 + 4x^2 + x$

$= x(3x^2 + 4x + 1)$

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

(69) $2x^3 - 3x^2 - 5x$

$= x(2x^2 - 3x - 5)$

$= \boxed{x(2x - 5)(x + 1)}$

(71) $9y^3 - 39y^2 + 12y$

$= 3y(3y^2 - 13y + 4)$

$= \boxed{3y(3y - 1)(y - 4)}$

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(73) $60z^3 + 40z^2 + 5z$

$= 5z(12z^2 + 8z + 1)$

$= \boxed{5z(2z+1)(6z+1)}$

(75) $15x^4 - 39x^3 + 18x^2$

$= 3x^2(5x^2 - 13x + 6)$

$= \boxed{3x^2(5x-3)(x-2)}$

(77) $10x^5 - 17x^4 + 3x^3$

$= x^3(10x^2 - 17x + 3)$

$= \boxed{x^3(2x-3)(5x-1)}$

(79) $6x^2 - 3xy - 18y^2$

$= 3(2x^2 - xy - 6y^2)$

$= 3(2x^2 - 4xy + 3xy - 6y^2)$

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

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

(81) $x^3 - 4 + 3x^3y - 12y$

$= (x^3 - 4) \cdot 1 + 3y(x^3 - 4)$

$= \boxed{(x^3-4)(1+3y)}$

(83) $4x^5(x+1) - 6x^3(x+1) - 8x^2(x+1)$

$= \boxed{2x^2(x+1)(2x^3 - 3x - 4)}$

(85) $3x^5 - 3x^4 + x^3 - x^2 + 5x - 5$

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

$= \boxed{(3x^4 + x^2 + 5)(x-1)}$

(87) $12x^2 + 10xy - 8y^2$

$= 2(6x^2 + 5xy - 4y^2)$

$= 2[6x^2 + 8xy - 3xy - 4y^2]$

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

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

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(83) $8x^2y + 34xy - 84y$

$= 2y(4x^2 + 17x - 42)$

$= 2y[4x^2 + 24x - 7x - 42]$

$= 2y[4x(x+6) - 7(x+6)]$

$= \boxed{2y(4x-7)(x+6)}$

$a \cdot b$: $4 \cdot -42$; $2 \cdot -21$; $1 \cdot -42$; $4 \cdot -32$

(85) $12a^2b - 46ab^2 + 14b^3$

$= 2b(6a^2 - 23ab + 7b^2)$

$= 2b[6a^2 - 2ab - 21ab + 7b^2]$

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

$= \boxed{2b(3a-b)(2a-7b)}$

$a \cdot c$: $6 \cdot 7$; $1 \cdot 6 \cdot 1 \cdot 7$; $2 \cdot 3 \cdot 1 \cdot 7$