7.2 p427

(1) $x^2 + 7x + 6$
$= (x+1)(x+6)$

(3) $x^2 + 7x + 10$
$= (x+2)(x+5)$

(5) $x^2 + 11x + 10$
$= (x+1)(x+10)$

(7) $x^2 - 7x + 12$
$= (x-4)(x-3)$

(9) $x^2 - 12x + 36$
$= (x-6)(x-6)$

(11) $y^2 - 8y + 15$
$= (y-5)(y-3)$

(13) $x^2 + 3x - 10$
$= (x-2)(x+5)$

(15) $y^2 + 10y - 39$
$= (y-3)(y+13)$

(17) $x^2 - 2x - 15$
$= (x-5)(x+3)$

(19) $x^2 - 2x - 8$
$= (x-4)(x+2)$

(21) $x^2 + 4x + 12$
$1 \cdot 12$
$2 \cdot 6$
$3 \cdot 4$
Prime

(23) $y^2 - 16y + 48$
$= (y-12)(y-4)$

(25) $x^2 - 3x + 6$
$1 \cdot 6 \quad -1 \cdot -6$
$2 \cdot 3 \quad -2 \cdot -3$
Prime

(27) $w^2 - 30w - 64$
$= (w-32)(w+2)$

(29) $y^2 - 18y + 65$
65
$1 \cdot 65$
$5 \cdot 13$
$= (y-13)(y-5)$

(31) $r^2 + 12r + 27$
$= (r+3)(r+9)$

(33) $y^2 - 7y + 5$
$1 \cdot 5 \quad -1 \cdot -5$
Prime

(35) $x^2 + 7xy + 6y^2$
$= (x+y)(x+6y)$

(37) $x^2 - 8xy + 15y^2$
$= (x-5y)(x-3y)$

(39) $x^2 - 3xy - 18y^2$
$= (x-6y)(x+3y)$

(41) $a^2 - 18ab + 45b^2$
$= (a-15b)(a-3b)$

(43) $3x^2 + 15x + 18$
$= 3(x^2 + 5x + 6)$
$= 3(x+1)(x+5)$

(45) $4y^2 - 4y - 8$
$= 4(y^2 - y - 2)$
$= 4(y-2)(y+1)$

(47) $10x^2 - 40x - 600$
$= 10(x^2 - 4x - 60)$
$= 10(x-10)(x+6)$

p1

(49) $3x^2 - 33x + 54$

$= 3(x^2 - 11x + 18)$

$= \boxed{3(x-9)(x-2)}$

(51) $2r^3 + 6r^2 + 4r$

$= 2r(r^2 + 3r + 2)$

$= \boxed{2r(r+1)(r+2)}$

(53) $4x^3 + 12x^2 - 72x$

$= 4x(x^2 + 3x - 18x)$

$\boxed{4x(x-3)(x+6)}$

(55) $2r^3 + 8r^2 - 64r$

$= 2r(r^2 + 4r - 32)$

$\boxed{2r(r-4)(r+8)}$

(57) $y^4 + 2y^3 - 80y^2$

$= y^2(y^2 + 2y - 80)$

$\boxed{y^2(y-8)(y+10)}$

(59) $x^4 - 3x^3 - 10x^2$

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

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

(61) $2w^4 - 26w^3 - 96w^2$

$= 2w^2(w^2 - 13w - 48)$

$= \boxed{2w^2(w-16)(w+3)}$

(63) $15xy^2 + 45xy - 60x$

$= 15x(y^2 + 3y - 4)$

$= \boxed{15x(y-1)(y+4)}$

(67) $2x^2y^2 - 32x^2yz + 30x^2z^2$

$= 2x^2(y^2 - 16yz + 15z^2)$

$= 2x^2(y-15z)(y-z)$

7.2 p428

(69) $(a+b)x^2 + (a+b)x - 20(a+b)$

$= (a+b)(x^2 + x - 20)$

$= \boxed{(a+b)(x+4)(x+5)}$

(71) $x^2 + 0.5x + 0.06$

$= (x+0.2)(x+0.3)$

(73) $x^2 - \frac{2}{5}x + \frac{1}{25}$

$= \left(x - \frac{1}{5}\right)\left(x - \frac{1}{5}\right)$

(75) $-x^2 - 3x + 40$

$= -(x^2 + 3x - 40)$

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

(77) (a) $-16t^2 + 16t + 32$

$= -16(t^2 - t - 2)$

$\boxed{= -16(t-2)(t+1)}$

(b) $-16(2)^2 + 16(2) + 32$

$\boxed{= 0}$

$-16(2-2)(2+1)$

$\boxed{= 0}$

(79) $x^2 + 8x + 15$

Find factors of 15 that sum to 8, then write in the form:

$(x + \quad)(x + \quad)$

(81) The last terms in each factor sum to b and multiply to c.