(u) $3x^2 = -30x - 75$

$+30x \quad +30x$

$3x^2 + 30x + 75 = 0$

$3(x^2 + 10x + 25) = 0$

$3(x+5)(x+5) = 0$

$x + 5 = 0$

$x = -5$

$5x^2 = 180$

$-180 \quad -180$

$5x^2 - 180 = 0$

$5(x^2 - 36) = 0$

$5(x-6)(x+6) = 0$

$x - 6 = 0 \quad x + 6 = 0$

$x = 6, \; x = -6$

$2x^2 - 20x = -50$

$+50 \quad +50$

$2x^2 - 20x + 50 = 0$

$2(x^2 - 10x + 25) = 0$

$2(x-5)(x-5) = 0$

$x - 5 = 0$

$x = 5$

$3x^2 + 30x + 48 = 0$

$3(x^2 + 10x + 16) = 0$

$3(x+8)(x+2) = 0$

$x + 8 = 0, \; x + 2 = 0$

$x = -8, \; x = -2$

(v) $(3x+7)(2x-1) = x + (5x-6)(x+2)$

$6x^2 - 3x + 14x - 7 = x + 5x^2 + 10x - 6x - 12$

$6x^2 + 11x - 7 = 5x^2 + 5x - 12$

$-5x^2 - 5x + 12 \quad -5x^2 - 5x + 12$

$x^2 + 6x + 5 = 0$

$(x+5)(x+1) = 0$

$x + 5 = 0 \quad x + 1 = 0$

$x = -5, \; x = -1$

$(2x-2)(x+4) = (x+9)^2 - 124$

$2x^2 + 8x - 2x - 8 = x^2 + 18x + 81 - 124$

$2x^2 + 6x - 8 = x^2 + 18x - 43$

$-x^2 - 18x + 43 \quad -x^2 - 18x + 43$

$x^2 - 12x + 35 = 0$

$(x-7)(x-5) = 0$

$x - 7 = 0 \quad x - 5 = 0$

$x = 7, \; x = 5$

(w) $3x + (x-4)(2x+3) = (x+2)(x-2) + 7$

$3x + 2x^2 + 3x - 8x - 12 = x^2 - 4 + 7$

$2x^2 - 2x - 12 = x^2 + 3$

$-x^2 \quad -3 \quad -x^2 - 3$

$x^2 - 2x - 15 = 0$

$(x-5)(x+3) = 0$

$x - 5 = 0 \quad x + 3 = 0$

$x = 5, \; x = -3$

$(2x-5)(3x-1) = 5x^2 - 17x + 69$

$6x^2 - 2x - 15x + 5 = 5x^2 - 17x + 69$

$6x^2 - 17x + 5 = 5x^2 - 17x + 69$

$-5x^2 + 17x - 69 \quad -5x^2 + 17x - 69$

$x^2 - 64 = 0$

$(x-8)(x+8) = 0$

$x - 8 = 0 \quad x + 8 = 0$

$x = 8, \; x = -8$