

Worksheet #12 Section 3.1;3.3 — Polynomial Addition and Multiplication Problems

*E. White*

Simplify each of the following problems.

(1)  $-2x - 3x$

(2)  $3x - 5x$

(3)  $4x - 3y - 6x + 2y$

(4)  $3x + 4y - 8x + 4y$

(5)  $7z - 2ab + 4z - 2z$

(6)  $9x - 8x + 2y - 6y$

(7)  $9z + 4x - 22z - 11x$

(8)  $2x^2 - xy + 4x^2 - 3y$

(9)  $4x + 4x - 8x + 12x$

(10)  $-(-x + y)$

(11)  $3x(x + 2)$

(12)  $2(x - 1)(x + 2)$

(13)  $3xy - 2x^2y + 4xy^2 - 5xy$

(14)  $3xz - 4xy$

(15)  $7ab - 5ab + 12ab$

(16)  $x(2x + 1)^2$

(17)  $-(2z) + 4z$

(18)  $-(2x) + 3$

(19)  $-(2x) - 4x$

(20)  $(3 - 2)x$

(21)  $-(2(3x)) + 4x$

(22)  $-(6x) - (4x) - 2x$

(23)  $-(4a + 2a)$

(24)  $5x - 2x(x - 3)$

(25)  $-(3y) - (2x)$

(26)  $3(-2x)$

(27)  $-y + 2x - (-y + x)$

(28)  $-(2xy^2) + 3xy^2$

(29)  $(a + x)(a + 1)$

(30)  $3(2x - 3y) - (x - 3y)$

(31)  $-(3x) + 4x$

(32)  $-(2(x + 2)) + 3$

(33)  $-(3x) + 2a$

(34)  $2x(x + 2)2$

(35)  $2x^2 - 3(x^2 + 2)$

(36)  $(2x)(3x)$

(37)  $(2 - 2)(x - y)$

(38)  $(3 - 2)x$

(39)  $3 - 2(x)$

(40)  $5 - 8(x) - 2x$

(41)  $3(-4(ab + 2)) + 2$

(42)  $(x - 3)x - 6$

(43)  $(x + 8)(x + 1)$

(44)  $-(2xy) - 3xy$

(45)  $(4x) - (9x) - (7y)$

(46)  $-12x^2 - 8xy + 2x$

(47)  $(2xy - 8x) - (3xy + 4y)$

(48)  $(2x - 3) - 2x$

(49)  $3(x - 2)(x + 4)$

(50)  $2x(3x - 2) - x(x + 4)$

(51)  $3 + x(2x - 3)$

(52)  $(5x + 1) - (3x)$

(53)  $(2x - 2)(2x)$

(54)  $2xy(3x - 5y) + x^2y - 3xy^2 - 5$

(55)  $4x - 2(4x)$

(56)  $-(3t) + 2t(3t - 2)$

(57)  $3x - (2x)(3)$

(58)  $(3 - 2)(x - y)$

(59)  $(3)(4x)$

(60)  $6(2x)$

(61)  $9(-3x)$

(62)  $-2(-3(x - 2) - 1)$

(63)  $(2a)(5b)$

(64)  $7 + (-2x)$

(65)  $(3) - (8) + 5x$

(66)  $(2)(x - 4)$

(67)  $(2a) - (5a)$

(68)  $9a^2b + 5a - ab$

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

(70)  $(7x) - (2y)$

(71)  $-(-2(x - 1))$

(72)  $a(-2y) + x$

(73)  $-6xy + 5x - 8xy + 3x$

(74)  $(3) - (x - 3)$

(75)  $8 - 3x - 3$

(76)  $(9) - 3(x) - (4)$

(77)  $2(x^2) + 2x^2$

(78)  $3x^2 - x(x - 1)$

(79)  $x + 1 + (x + 2)$

(80)  $1(2x) - 12x$

(81)  $-(-3 - (x))$

(82)  $3x - x(3x - 1)$

(83)  $(2 - x) - (x - 2)$

(84)  $1 + (3 - x^2)$

$$(85) -(-2x) - 3x$$

$$(88) x + 1(x + 4)$$

$$(91) 2x + 3(x - 1)$$

$$(94) 2(3x - 1) - 3(x - 1)$$

$$(97) (2)(x) - 3x$$

$$(100) -(-x - (-x - 1))$$

$$(103) 5 - \sqrt{5} + 9 - \sqrt{5}$$

$$(106) (2(x + 1))^2$$

$$(109) 2(3x - 1)$$

$$(112) \sqrt{x} - 3x + 7\sqrt{x} - 5x - 3$$

$$(115) (5x) - (-3x) - (7x)$$

$$(118) 3(\sqrt{5} - 2\sqrt{5}) + 7\sqrt{5}$$

$$(86) -(-2x - 3x)$$

$$(89) (x + 4)x + 2$$

$$(92) 3x - 2x + 7x$$

$$(95) (2(3x - 1) - 3)(x - 1)$$

$$(98) (2)(x - 3x)$$

$$(101) 5x - 7x$$

$$(104) 2x - 6x(x - 2)$$

$$(107) (2 + 5)x$$

$$(110) 2(3x) - 1$$

$$(113) (7x - 2x) - (3x)$$

$$(116) 2(3(5(x + 2)))$$

$$(119) 3x(2x - 1)(x + 2)$$

$$(87) 2 - 4(3 + x)$$

$$(90) (3 - (2x))x - 3$$

$$(93) x + 1(x + 2)$$

$$(96) 5x - 2(2 - (x + 1))$$

$$(99) 3x^2y - 2xy^2$$

$$(102) -4x - 3 + 6x^2 - 5x - 8x^2 + 7$$

$$(105) (3x) - (5x)$$

$$(108) (3x - 2) + 2(-4x - 1) - (-5x + 1)$$

$$(111) 3^2x - 3x^2 + 2x - 8$$

$$(114) 3((2x) - 3)$$

$$(117) (5x) - (-3x) - (7x)$$

$$(120) 4(x + 2)^2 - (2x + 1)^2$$

Answers: (1)  $-5x$  (2)  $-2x$  (3)  $-y - 2x$  (4)  $8y - 5x$  (5)  $9z - 2ab$  (6)  $-4y + x$   
(7)  $-13z - 7x$  (8)  $-xy - 3y + 6x^2$  (9)  $12x$  (10)  $-y + x$  (11)  $3x^2 + 6x$  (12)  $2x^2 + 2x - 4$   
(13)  $4xy^2 - 2x^2y - 2xy$  (14)  $3xz - 4xy$  (15)  $14ab$  (16)  $4x^3 + 4x^2 + x$  (17)  $2z$   
(18)  $-2x + 3$  (19)  $-6x$  (20)  $x$  (21)  $-2x$  (22)  $-12x$  (23)  $-6a$  (24)  $-2x^2 + 11x$   
(25)  $-3y - 2x$  (26)  $-6x$  (27)  $x$  (28)  $xy^2$  (29)  $ax + x + a^2 + a$  (30)  $-6y + 5x$   
(31)  $x$  (32)  $-2x - 1$  (33)  $-3x + 2a$  (34)  $4x^2 + 8x$  (35)  $-x^2 - 6$  (36)  $6x^2$   
(37)  $0$  (38)  $x$  (39)  $-2x + 3$  (40)  $-10x + 5$  (41)  $-12ab - 18$  (42)  $x^2 - 3x - 6$   
(43)  $x^2 + 9x + 8$  (44)  $-5xy$  (45)  $-7y - 5x$  (46)  $-8xy - 12x^2 + 2x$  (47)  $-xy - 4y - 8x$   
(48)  $-3$  (49)  $3x^2 + 6x - 24$  (50)  $5x^2 - 8x$  (51)  $2x^2 - 3x + 3$  (52)  $2x + 1$  (53)  $4x^2 - 4x$   
(54)  $-13xy^2 + 7x^2y - 5$  (55)  $-4x$  (56)  $6t^2 - 7t$  (57)  $-3x$  (58)  $-y + x$  (59)  $12x$   
(60)  $12x$  (61)  $-27x$  (62)  $6x - 10$  (63)  $10ab$  (64)  $-2x + 7$  (65)  $5x - 5$  (66)  $2x - 8$   
(67)  $-3a$  (68)  $9a^2b - ab + 5a$  (69)  $-12x$  (70)  $-2y + 7x$  (71)  $2x - 1$  (72)  $-2ay + ax$   
(73)  $-14xy + 8x$  (74)  $-x + 6$  (75)  $-3x + 5$  (76)  $-3x + 5$  (77)  $4x^2$  (78)  $2x^2 + x$   
(79)  $2x + 3$  (80)  $-10x$  (81)  $x + 3$  (82)  $-3x^2 + 4x$  (83)  $-2x + 4$  (84)  $-x^2 + 4$   
(85)  $-x$  (86)  $5x$  (87)  $-4x - 10$  (88)  $2x + 4$  (89)  $x^2 + 4x + 2$  (90)  $-2x^2 + 3x - 3$   
(91)  $5x - 3$  (92)  $8x$  (93)  $2x + 2$  (94)  $3x + 1$  (95)  $6x^2 - 11x + 5$  (96)  $7x - 2$   
(97)  $-x$  (98)  $-4x$  (99)  $-2xy^2 + 3x^2y$  (100)  $-1$  (101)  $-2x$  (102)  $-2x^2 - 9x + 4$   
(103)  $-2\sqrt{5} + 14$  (104)  $-6x^2 + 14x$  (105)  $-2x$  (106)  $4x^2 + 8x + 4$  (107)  $7x$  (108)  $-5$   
(109)  $6x - 2$  (110)  $6x - 1$  (111)  $-3x^2 + 11x - 8$  (112)  $-8x + 8\sqrt{x} - 3$  (113)  $2x$   
(114)  $6x - 9$  (115)  $x$  (116)  $30x + 60$  (117)  $x$  (118)  $4\sqrt{5}$  (119)  $6x^3 + 9x^2 - 6x$   
(120)  $12x + 15$