

INTRODUCTION TO ALGEBRA

Form 1 Regular Course
Vol 1B

Part 3 - Multiplication and Division

1. $(3y)(-2y^4) = -6y^5$
2. $(-9x^2)(3x^5) = -27x^7$
3. $(-x^4)(-3xyz^2) = 3x^5yz^2$
4. $h \cdot h \cdot k \cdot k = h^2k^2$
5. $(-4h^2k^3) \div (-2h^2k) \times (3hk^2) = \frac{(4h^2k^3)(3hk^2)}{2h^2k} = 6hk^4$
6. $(2x^4y^2)(-x^2y)(2xy) = -4x^7y^4$

Part 4 - Distribution Law of Multiplication

1. (a) $2x(3x+2) = 6x^2 + 4x$
- (b) $-4(2a-3b) = -8a + 12b$
- (c) $5(-2x+3y-4z) = -10x + 15y - 20z$
- (d) $(-x)(7x^2-8x) = -7x^3 + 8x^2$
- (e) $3(x+4) - 4(x+2)x + 2 = 3x + 12 - 4x^2 - 8x + 2 = -4x^2 - 5x + 14$
- (f) $x(3+x) - x(3-x) = 3x + x^2 - 3x + x^2 = 2x^2$
- (g) $(-4x)(3x-y) + 3xy = -12x^2 + 4xy + 3xy = -12x^2 + 7xy$
- (h) $3x - (4+x)x = 3x^2 - (4x + x^2) = -x^2 - x$
- (i) $2x(1-6x) - 3(x^2-8) = 2x - 12x^2 - 3x^2 + 24 = -15x^2 + 2x + 24$

$$2. \text{ (a) } (x-4)(x-5) = x^2 - 5x - 4x + 20 = x^2 - 9x + 20$$

$$\text{(b) } (3x+1)(1-x) = 3x - 3x^2 + 1 - x = -3x^2 + 2x + 1$$

$$\text{(c) } (x+1)(8x-3) - 5x = 8x^2 + 8x - 3x - 3 - 5x = 8x^2 - 3$$

$$\begin{aligned} \text{(d) } & -3x^2 - (7x-4)(x+1) \\ & = -3x^2 - (7x^2 + 7x - 4x - 4) \\ & = -3x^2 - (7x^2 + 3x - 4) \\ & = -10x^2 - 3x + 4 \end{aligned}$$

$$\text{(e) } -(x^2 + 4) + (x+2)^2 = -x^2 - 4 + (x^2 + 4x + 4) = 4x$$

$$\text{(f) } (4x^2 - 9) - (2x-3)^2 = 4x^2 - 9 - (4x^2 - 12x + 9) = 12x - 18$$

Part 5 – Formula

$$1. \quad M = \frac{2(6) - 3(-2) + 4}{(-2) - 6} = \frac{12 + 6 + 4}{-2 - 6} = \frac{22}{-8} = -\frac{11}{4}$$

$$2. \quad V = [(-10) - 8]^2 + 3^2 = (-18)^2 + 9 = 324 + 9 = 333$$

$$3. \text{ (a) Sub } n = 1000,$$

$$1 + 2 + 3 + \dots + 1000$$

$$= \frac{1}{2}(1000)(1001)$$

$$= 500500$$

$$\text{(b) } 689 + 690 + \dots + 1000$$

$$= (1 + 2 + 3 + \dots + 1000) - (1 + 2 + 3 + \dots + 688)$$

$$= 500500 - \frac{1}{2}(688)(689)$$

$$= 500500 - 237016$$

$$= 263484$$