

1. Simplify each algebraic expression. Then state the degree of the solution. (2 marks each)

a) $2x - 3y + x + 5y - 3$

$$3x + 2y - 3$$

$$D = 1$$

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

$$6x^2 - 3x$$

$$D = 2$$

b) $-2y^2 + 5x^2y - 4y^2 + 2x^2y - xy^2$

$$-6y^2 + 7x^2y - xy^2$$

$$D = 3$$

d) $5 - 3(x - 2) + 5x = 5 - 3x + 6 + 5x$

$$2x + 11$$

$$D = 1$$

2. Simplify each algebraic expression. (2 marks each)

a) $(x + 3)(x + 4)$ * Double Distribution

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

$$= x^2 + 4x + 3x + 12$$

$$= x^2 + 7x + 12$$

e) $(x + 7)(x - 7)$

$$x^2 - 49$$

b) $(x - 2)(x + 5) = x^2 + 5x - 2x - 10$

$$= x^2 + 3x - 10$$

f) $(3x + 2)^2 = (3x + 2)(3x + 2)$

$$9x^2 + 12x + 4$$

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

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

$$= 2x^2 + 3x - 5$$

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

$$= 2x^3 - 4x^2 + 2x - 3x^2 + 6x - 3$$

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

d) $(x - 3y)(x + 6y)$

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

$$= x^2 + 3xy - 18y^2$$

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

$$3x^4 + 2x^3 - 5x^2 - 9x^3 - 6x^2 + 15x + 6x^2 + 4x - 10$$

$$= 3x^4 - 7x^3 - 5x^2 + 19x - 10$$

3. Simplify each algebraic expression. (3 marks each)

a) $3(2x-3)(2x+3) - (x-4)^2$

$$3(4x^2 - 9) - (x^2 - 8x + 16)$$

$$12x^2 - 27 - x^2 + 8x - 16$$

$$= 11x^2 + 8x - 43$$

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

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

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

$$= x^3 - 6x^2 + 12x - 8$$

4. Your rectangular flower garden measures $5\text{ m} \times 3\text{ m}$. You decide to expand the garden by the same amount on all sides. Sketch and label diagram of the situation. Write and simplify an algebraic expression representing the area of the new garden. (3 marks)

