

4.c) $4a(a+1) - 3(a+1) = (4a-3)(a+1)$

5. a) $x^2 - 5x - 14 = (x-7)(x+2)$

d) $2y^2 + 5y - 7 = (2y+7)(y-1)$

7.a) $ax + ay + bx + by = a(x+y) + b(x+y) = (a+b)(x+y)$

9.a) $2x(x-3) + 7(3-x) = 2x(x-3) - 7(x-3) = (2x-7)(x-3)$

c) $x^3 - x^2 - 4x + 4 = x^2(x-1) - 4(x-1) = (x^2-4)(x-1) = (x+2)(x-2)(x-1)$



12. b) $A = \pi(r_2^2) - \pi(r_1^2) = \pi(r_2^2 - r_1^2) = \pi(r_2 - r_1)(r_2 + r_1)$

i) $A = \pi(r_3 - r_1)(r_3 + r_1)$

Diff. = $\pi(r_3 - r_2) - \pi(r_2 - r_1) = \pi(r_3 - r_2 - r_2 + r_1) = \pi(r_3 - r_2 - r_1)$

= $\pi [r_3 - r_2 - (r_2 - r_1)] = \pi [r_3 - r_2 - r_2 + r_1] = \pi [r_3 - 2r_2 + r_1]$

f) $12m^3 - 14m^2 - 30m + 35 = 2m^2(6m-7) - 5(6m-7) = (2m^2-5)(6m-7)$

b) $xy + 6x + 5y + 30 = x(y+6) + 5(y+6) = (x+5)(y+6)$

b) $2ab + 2a - 3b - 3 = 2a(b+1) - 3(b+1) = (2a-3)(b+1)$

c) $x^3 + x^2 - x - 1 = x^2(x+1) - (x+1) = (x^2-1)(x+1) = (x-1)(x+1)^2$

= $2(2x+5)(4x+9)$

f) $16x^2 + 76x + 90 = 2(8x^2 + 38x + 45) = 2[2x(4x+9) + 5(4x+9)] = 2(2x+5)(4x+9)$

e) $8a^2 - 2ab - 21b^2 = 4a(2a+3b) - 7b(2a+3b) = (4a-7b)(2a+3b)$

c) $6m^2 - 90m + 324 = 6(m^2 - 15m + 54) = 6(m-6)(m-9)$

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

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

Handout

$$4. d) \pi r^2 + \pi r h$$

$$= \pi r (r+h)$$

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

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

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

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

$$= x(x+3)$$

Not Assigned until next day (For L4)

$$5) d) 25 - x^2 y^2$$

$$= (5-xy)(5+xy)$$

$$* e) (x+3)^2 - 16$$

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

$$= (x+7)(x-1)$$

$$c) 81x^2 - 4y^2$$

$$= (9x-2y)(9x+2y)$$

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

$$= [2x+3-(x-2)][2x+3+(x-2)]$$

$$= (x+5)(3x+1)$$

$$g) x^3 - x$$

$$= x(x^2-1)$$

$$= x(x+1)(x-1)$$

$$h) \pi R^2 - \pi r^2$$

$$= \pi(R^2 - r^2)$$

$$= \pi(R+r)(R-r)$$

$$i) x^4 - y^4$$

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

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

$$6. c) x^2 + 15x + 54$$

$$= (x+9)(x+6)$$

$$f) x^2 - 16x - 80$$

$$= (x-20)(x+4)$$

$$h) x^4 - 18x^2 + 81$$

$$= (x^2-9)^2$$

$$= (x^2-9)(x^2-9)$$

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

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

$$= (x+7y)(x-y)$$

$$7. b) 12x^2 - 5x - 2$$

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

$$= 3x(4x+1) - 2(4x+1)$$

$$= (3x-2)(4x+1)$$

$$d) 9x^2 - 30x + 25$$

$$= (3x-5)^2$$

$$e) 4x^4 - 3x^2 - 1$$

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

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

$$h) 4x^4 - 13x^2 + 9$$

$$= (4x^2-9)(x^2-1)$$

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

$$k) 21x^2 - 29x + 10$$

$$= (3x-2)(7x-5)$$

1	3	7	21	1	2
21	7	3	1	10	5

sum of 29

$$8. a) x^3 - 4x^2 + 3x - 12$$

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

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

$$b) 2x^3 - 6x^2 - 3x + 9$$

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

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

$$c) 4x^3 + 8x^2 - x - 2$$

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

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

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

$$d) 2x^3 - 6x^2 + 10x - 30$$

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

$$= 2[x^2(x-3) + 5(x-3)]$$

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

$$e) 3x^5 - 12x^3 - x^2 + 4$$

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

$$= (3x^3-1)(x^2-4)$$

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

$$f) 2x^4 - 4x^3 - 8x^2 + 16x$$

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

$$= 2x[x^2(x-2) - 4(x-2)]$$

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

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

$$9. a) x^2 - 13x + 22$$

$$= (x-11)(x-2)$$

$$9. g) 4x^2 + 20x + 25$$

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

$$d) 10x^3 - 21x^2 + 8x$$

$$= x(10x^2 - 21x + 8)$$

$$= x(10x^2 - 5x - 16x + 8)$$

$$= x[5x(2x-1) - 8(2x-1)]$$

$$= x(5x-8)(2x-1)$$

$$9. j) 100a^2 - 36b^2$$

$$= 4(25a^2 - 9b^2)$$

$$= 4(5a+3b)(5a-3b)$$