Ex 1.3

2. $6ab - 12bc$

$6b(a - 2c)$

5. $2a^3 - 4a^2 + 8a$

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

8. $3x^2y - 9xy^2 + 15xyz$

$3xy(x - 3y + 5z)$

13. $8axc + 4ay - 6bx - 3by$

$4a(2x + y) - 3b(2x + y)$

$(2x + y)(4a - 3b)$

15. $6xy + 12yz - 8xz - 9y^2$

$6xy - 9y^2 + 12yz - 8xz$

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

$3y(2x - 3y) - 4z(2x - 3y)$

$(2x - 3y)(3y - 4z)$

16. $6x^2 - 3y(3x - 2a) - 4ax$

$6x^2 - 4ax - 3y(3x - 2a)$

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

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

17 $3ax^2 - 3ay^2 - 4bx^2 + 4by^2$

$3a(x^2 - y^2) - 4b(x^2 - y^2)$

$(x^2 - y^2)(3a - 4b)$

$(x + y)(x - y)(3a - 4b)$

19 $x^2 - 4y^2 \Rightarrow (x + 2y)(x - 2y)$

22 $36x^2 - 25 \Rightarrow (6x + 5)(6x - 5)$

25 $x^2y^2 - 1 = (xy + 1)(xy - 1)$

28 $45 - 5x^2 = 5(9 - x^2) = 5(3 + x)(3 - x)$

31 $(3a - 2b)^2 - 9 = (3a - 2b + 3)(3a - 2b - 3)$

40 $7x^2 - 18x + 8$

$(7x - 4)(x - 2)$

43 $12x^2 - 11x - 5$

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

46 $6x^2 - 11x + 3$

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

49 $6y^2 + 11y - 35$

$(3y - 5)(2y + 7)$

57 $x^2 + 3\sqrt{3}x + 6$ $a = 1$, $b = 3\sqrt{3}$, $c = 6$

$$x = \frac{-3\sqrt{3} \pm \sqrt{(3\sqrt{3})^2 - 4(1)(6)}}{2(1)}$$

$$x = \frac{-3\sqrt{3} \pm \sqrt{27 - 24}}{2}$$

$$x = \frac{-3\sqrt{3} \pm \sqrt{3}}{2} \quad \nearrow \frac{-3\sqrt{3} + \sqrt{3}}{2} = \frac{-2\sqrt{3}}{2} = -\sqrt{3}$$

$$\searrow \frac{-3\sqrt{3} - \sqrt{3}}{2} = \frac{-4\sqrt{3}}{2} = -2\sqrt{3}$$

$\Rightarrow$ factors $(x + \sqrt{3})(x + 2\sqrt{3})$

52

(i) $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

(ii) $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

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

53 (i) $27x^3 - y^3 = (3x - y)(9x^2 + 3xy + y^2)$

(ii) $x^3 - 64 = (x - 4)(x^2 + 4x + 16)$

(iii) $8x^3 - 27y^3 = (2x - 3y)(4x^2 + 6xy + 9y^2)$

54 (i) $8 + 27h^3 = (2 + 3h)(4 - 6h + 9h^2)$

(ii) $64 - 125a^3 = (4 - 5a)(16 + 20a + 25a^2)$

(iii) $27a^3 + 64b^3 = (3a + 4b)(9a^2 - 12ab + 16b^2)$

55 (i) $a^3 - 8b^3c^3 = (a - 2bc)(a^2 + 2abc + 4b^2c^2)$

(ii) $5x^3 + 40y^3 = 5(x^3 + 8y^3) = 5(x + 2y)(x^2 - 2xy + 4y^2)$

(iii) $(x+y)^3 - z^3 = (x+y-z)((x+y)^2 + z(x+y) + z^2)$

~~$(x+y-z)(x^2 + 2xy + y^2 + zx + zy + z^2)$~~