

Exercise 2K

Question 6:

$$8a^3 + 125b^3 - 64c^3 + 120abc$$

$$= (2a)^3 + (5b)^3 + (-4c)^3 - 3(2a)(5b)(-4c)$$

=
$$(2a + 5b - 4c) [(2a)^2 + (5b)^2 + (-4c)^2 - (2a) (5b) - (5b) (-4c) - (-4c)$$

(2a)]

$$= (2a + 5b - 4c) (4a^2 + 25b^2 + 16c^2 - 10ab + 20bc + 8ca).$$

Question 7:

$$8 - 27b^3 - 343c^3 - 126bc$$

$$= (2)^3 + (-3b)^3 + (-7c)^3 - 3(2)(-3b)(-7c)$$

=
$$(2 - 3b - 7c)[(2)^2 + (-3b)^2 + (-7c)^2 - (2)(-3b) - (-3b)(-7c) - (-7c)$$

(2)]

$$= (2 - 3b - 7c) (4 + 9b^2 + 49c^2 + 6b - 21bc + 14c).$$

Question 8:

$$125 - 8x^3 - 27y^3 - 90xy$$

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

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

(5)]

$$= (5 - 2x - 3y) (25 + 4x^2 + 9y^2 + 10x - 6xy + 15y).$$

Question 9:

$$2\sqrt{2}a^3 + 16\sqrt{2}b^3 + c^3 - 12abc$$

$$\begin{split} &= \left(\sqrt{2}a\right)^3 + \left(2\sqrt{2}b\right)^3 + \left(c\right)^3 - 3\left(\sqrt{2}a\right)\left(2\sqrt{2}b\right)(c) \\ &= \left(\sqrt{2}a + 2\sqrt{2}b + c\right) \\ &= \left(\sqrt{2}a\right)^2 + \left(2\sqrt{2}b\right)^2 + c^2 - \left(\sqrt{2}a\right)\left(2\sqrt{2}b\right) - \left(2\sqrt{2}b\right)(c) - (c)\left(\sqrt{2}a\right) \\ &= \left(\sqrt{2}a + 2\sqrt{2}b + c\right)\left(2a^2 + 8b^2 + c^2 - 4ab - 2\sqrt{2}bc - \sqrt{2}ac\right). \end{split}$$

Question 10:

$$x^3 + y^3 - 12xy + 64$$

$$= x^3 + y^3 + 64 - 12xy$$

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

=
$$(x + y + 4)[(x)^2 + (y)^2 + (4)^2 - x \times y - y \times 4 - 4 \times x]$$

$$= (x + y + 4) (x^2 + y^2 + 16 - xy - 4y - 4x).$$

******* END ******