RD SHARMA

Solutions

Class 8 Maths

Chapter 6

Ex *6.7*

Q1) Find the following products:

(i) $(x + 4)(x + 7)$

(ii) $(x - 11)(x + 4)$

(iii) $(x + 7)(x - 5)$

(iv) $(x - 3)(x - 2)$

(v) $(y^2 - 4)(y^2 - 3)$

(vi) $(x + \frac{4}{3})(x + \frac{3}{4})$

(vii) $(3x + 5)(3x + 11)$

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

(ix) $(z^2 + 2)(z^2 - 3)$

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

(xi) $(3x^2 - 4xy)(3x^2 - 3xy)$

(xii) $(x + \frac{1}{5})(x + 5)$

(xiii) $(z + \frac{3}{4})(z + \frac{4}{3})$

(xiv) $(x^2 + 4)(x^2 + 9)$

(xv) $(y^2 + 12)(y^2 + 6)$

(xvi) $(y^2 + \frac{5}{7})(y^2 - \frac{14}{5})$

(xvii) $(p^2 + 16)(p^2 - \frac{1}{4})$

Solution:

(i) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(x + 4)(x + 7)$

$= x^2 + (4 + 7)x + 4 \times 7$

$= x^2 + 11x + 28$

(ii) Here, we will use the identity $(x - a)(x + b) = x^2 + (b - a)x - ab$.

$(x - 11)(x + 4)$

$= x^2 + (4 - 11)x - 11 \times 4$

$= x^2 - 7x - 44$

(iii) Here, we will use the identity $(x + a)(x - b) = x^2 + (a - b)x - ab$.

$(x + 7)(x - 5)$

$= x^2 + (7 - 5)x - 7 \times 5$

$= x^2 + 2x - 35$

(iv) Here, we will use the identity $(x - a)(x - b) = x^2 - (a + b)x + ab$.

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

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

$= x^2 - 5x + 6$

(v) Here, we will use the identity $(x - a)(x - b) = x^2 - (a + b)x - ab$.

$(y^2 - 4)(y^2 - 3)$

$= (y^2)^2 - (4 + 3)(y^2) + 4 \times 3$

$= y^4 - 7y^2 + 12$

(vi) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(x + \frac{4}{3})(x + \frac{3}{4})$

$= x^2 + (\frac{4}{3} + \frac{3}{4})x + \frac{4}{3} \times \frac{3}{4})$

$= x^2 + \frac{25}{12}x + 1$

(vii) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(3x + 5)(3x + 11)$

$= (3x)^2 + (5 + 11)(3x) + 5 \times 11$

$= 9x^2 + 48x + 55$

(viii) Here, we will use the identity $(x - a)(x + b) = x^2 + (b - a)x - ab$.

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

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

$= 4x^4 + 4x^2 - 15$

(ix) Here, we will use the identity $(x + a)(x - b) = x^2 + (a - b)x - ab$.

$(z^2 + 2)(z^2 - 3)$

$= (z^2)^2 + (2 - 3)(z^2) - 2 \times 3$

$= z^4 - z^2 - 6$

(x) Here, we will use the identity $(x - a)(x - b) = x^2 - (a + b)x - ab$.

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

$= (4y - 3x)(4y - 2x)$ (Taking common -1 from both parentheses)

$= (4y)^2 - (3x + 2x)(4y) + 3x \times 2x$

$= 16y^2 - (12xy + 8xy) + 6x^2$

$= 16y^2 - 20xy + 6x^2$

(xi) Here, we will use the identity $(x - a)(x - b) = x^2 - (a + b)x - ab$.

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

$= (3x^2)^2 - (4xy + 3xy)(3x^2) + 4xy \times 3xy$

$= 9x^4 - (12x^3y + 9x^3y) + 12x^2y^2$

$= 9x^4 - 21x^3y + 12x^2y^2$

(xii) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(x + \frac{1}{5})(x + 5)$

$= x^2 + (\frac{1}{5} + 5)x + \frac{1}{5} \times 5$

$= x^2 + \frac{26}{5}x + 1$

(xiii) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(z + \frac{3}{4})(z + \frac{4}{3})$

$= z^2 + (\frac{3}{4} + \frac{4}{3})x + \frac{3}{4} \times \frac{4}{3}$

$= z^2 + \frac{25}{12}x + 1$

(xiv) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(x^2 + 4)(x^2 + 9)$

$= (x^2)^2 + (4 + 9)(x^2) + 4 \times 9$

$= x^4 + 13x^2 + 36$

(xv) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$.

$(y^2 + 12)(y^2 + 6)$

$= (y^2)^2 + (12 + 6)(y^2) + 12 \times 6$

$= y^4 + 18xy^2 + 72$

(xvi) Here, we will use the identity $(x + a)(x - b) = x^2 + (a - b)x - ab$.

$(y^2 + \frac{5}{7})(y^2 - \frac{14}{5})$

$= (y^2)^2 + (\frac{5}{7} - \frac{14}{5})(y^2) - \frac{5}{7} \times \frac{14}{5}$

$= y^4 - \frac{73}{35}y^2 - 2$

(xvii) Here, we will use the identity $(x + a)(x - b) = x^2 + (a - b)x - ab$.

$(p^2 + 16)(p^2 - \frac{1}{4})$

$= (p^2)^2 + (16 - \frac{1}{4})(p^2) - 16 \times \frac{1}{4}$

$= p^4 + \frac{63}{4}p^2 - 4$

Q2. Evaluate the following:

(i) 102 x 106

(ii) 109 x 107

(iii) 35 x 37

(iv) 53 x 55

(v) 103 x 96

(vi) 34 x 36

(vii) 994 x 1006

Solution:

(i) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$

102 x 106

$= (100 + 2)(100 + 6)$

$= 100^2 + (2 + 6)100 + 2 \times 6$

$=10000 + 800 + 12 = 10812$

(ii) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$

109 x 107

$= (100 + 9)(100 + 7)$

$= 100^2 + (9 + 7)100 + 9 \times 7$

$=10000 + 1600 + 63 = 11663$

(iii) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$

35 x 37

$= (30 + 5)(30 + 7)$

$= 30^2 + (5 + 7)30 + 5 \times 7$

$= 900 + 360 + 35 = 1295$

(iv) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$

53 x 55

$= (50 + 3)(50 + 5)$

$= 50^2 + (3 + 5)50 + 3 \times 5$

$= 2500 + 400 + 15 = 2915$

(v) Here, we will use the identity $(x + a)(x - b) = x^2 + (a - b)x - ab$

103 x 96

$= (100 + 3)(100 - 4)$

$= 100^2 + (3 - 4)100 - 3 \times 4$

$= 10000 - 100 - 12 = 9888$

(vi) Here, we will use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$

34 x 36

$= (30 + 4)(30 + 6)$

$= 30^2 + (4 + 6)30 + 4 \times 6$

$= 900 + 300 + 24 = 1224$

(vii) Here, we will use the identity $(x - a)(x + b) = x^2 + (b - a)x - ab$

994 x 1006

$= (1000 - 6) \times (1000 + 6)$

$= 1000^2 + (6 - 6) \times 1000 - 6 \times 6$

$= 1000000 - 36 = 999964$