

ALGEBRAIC EXPRESSIONS AND IDENTITIES**IDENTITIES****EXERCISE**

Q.1 Find the product of the following binomials :

(i) $\left(\frac{4}{3}x^2 + 3\right) \left(\frac{4}{3}x^2 + 3\right)$

(ii) $\left(\frac{2}{3}x^2 + 5y^2\right) \left(\frac{2}{3}x^2 + 5y^2\right)$

Q.2 If $x - \frac{1}{x} = 9$, find the value of $x^2 + \frac{1}{x^2}$.

Q.3 If $x^2 + \frac{1}{x^2} = 27$, find the values of each of the following :

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

(ii) $x - \frac{1}{x}$

Q.4 If $3x + 2y = 12$ and $xy = 6$, find the value of $9x^2 + 4y^2$.

Q.5 If $4x^2 + y^2 = 40$ and $xy = 6$, find the value of $2x + y$.

Q.6 Find the continued product :

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

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

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

(iv) $\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)\left(x^4 + \frac{1}{x^4}\right)$

(v) $\left(x - \frac{y}{5} - 1\right)\left(x + \frac{y}{5} + 1\right)$

Q.7 Using the formulae for squaring a binomial, evaluate the following :

(i) $(101)^2$

(ii) $(99)^2$

(iii) $(93)^2$

Q.8 Find the value of x, if

(i) $6x = 23^2 - 17^2$

(ii) $4x = 98^2 - 88^2$

(iii) $25x = 536^2 - 136^2$

Q.9 Evaluate the following:

(i) 107×103

(ii) 56×48

(iii) 95×97

ANSWER KEY

1. (i) $\frac{16}{9}x^4 + 8x^2 + 9$

(ii) $\frac{4}{9}x^4 + \frac{20}{3}x^2y^2 + 25y^4$

2. 83

3. (i) $\pm \sqrt{29}$ (ii) ± 5

4. 72

5. ± 8

6. (i) $x^4 - 16$

(ii) $16x^4 - 81y^4$

(iii) $x^8 - 1$

(iv) $x^8 - \frac{1}{x^8}$

(v) $x^2 - \frac{y^2}{25} - \frac{2y}{5} - 1$

7. (i) 10201

(ii) 9801

(iii) $8100 + 540 + 9 = 8649$

8. (i) $x = 40$

(ii) $x = 465$

(iii) $x = 10752$

9. (i) 11021

(ii) 2688

(iii) 9215