Algebric Identities

1. Add:

   $-5x^2y^2$, $-\frac{11}{5}x^2y^2$, $7x^2y^2$, $\frac{2}{3}x^2y^2$

   Ans $(\frac{7}{15}x^2y^2)$

2. Subtract:

   $-7x^2y$ from $-9x^2y$

   Ans $(-2x^2y)$

3. Add Together:

   $(7a-3b+5c)$, $(2a-3b-4c)$ and $(c-4a+b)$

   Ans $(5a-5b+2c)$

4. Subtract:

   $(13xy-6x^2+4a^2-1)$ from $(25x^2+16xy-3b^2-2)$

   Ans $(31x^2+3xy-3b^2-1-4a^2)$

5. Simplify:

   $5a+7a+2b+8b-a+1$

   Ans $(11a+10b+1)$

6. Two adjacent sides of a rectangle are $(3x^2-5y^2)$ and $(7x^2-xy)$. Find its perimeter.

   Ans $(20x^2-2xy-10y^2)$

7. The perimeter of a triangle is $(7p^2-8p+9)$ and two of its sides are $(2p^2-p+1)$ and $(11p^2-3p+5)$. Find its third side of the triangle.

   Ans $(-6p^2-4p+3)$

8. Find the product:

   i) $(4a^2b) \times (-6a^3b^2c)$ Ans $(-24a^5b^3c)$

   ii) $(-\frac{6}{8}x^4yz) \times (24x^2y^2z^3)$ Ans $(-18x^6y^3z^4)$

9. Multiply:

   $(3a+2b)$ and $(5a+7b)$

   Ans $(15a^2+31ab+14b^2)$

10. Multiply:

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

Ans $(10x^4+13x^2y^2-3y^4)$

11.   Simplify:
$(5x-3y)(-x+7y) - (2x+5y)(3x-4y)$

Ans $(-11x^2+31xy-y^2)$

12.   Find the product:
$(3x-2)(2x^2+3x-5)$

Ans $(6x^3+5x^2-21x+10)$

13.   Multiply:

$(5x^2-7x+2)$ by $(2x^2-3x-5)$

Ans $(10x^4-29x^3+29x-10)$

14.   Simplify:

$(5x-7)(2x+3)(7x-8)$

Ans $(70x^3-73x^2-155x+168)$

15.   Divide:

$(35x^2y^3)$ by $(-5x^3y^2)$

Ans $(-\frac{7y}{x})$

16.   Divide:
$(-18a^3bc^3)$ by $(-6abc^5)$

Ans $(3a^2/c^2)$

17.   Simplify:

$[4z+\frac{5}{2}]^2$

Ans $[16z^2+20z+\frac{25}{4}]$

18.   Simplify:

$$[9y^2 - \frac{1}{2}z^2]^2$$

Ans $[81y^4 - 9y^2z^2 + \frac{1}{4}z^4]$

19.   Multiply using a suitable identity:
   $(x+8)\ (x+8)$

Ans $(x^2+16x+64)$

20. $(3a-5b)\ (3a-5b)$

Ans $(9a^2-30ab+25b^2)$

21. $[\frac{5}{9}x+\frac{1}{2}y]\ [\frac{5}{9}x - \frac{1}{2}y]$

Ans $[\frac{25}{81}x^2 - \frac{1}{4}y^2]$

22. $(135)^2 - (125)^2$

Ans (2600)

23.   Divide:
   $(2x^2+3x+1)$ by $(x+1)$

Ans $(2x+1)$

24.   Divide:
   $(9x-6x^2+x^3-2)$ by $(x-2)$

Ans (x^2-4x+1)

25.   Divide:
   $(29x-6x^2-28)$ by $(3x-4)$

Ans $(-2x+7)$

26.   Divide:
   $(5x^3-4x^2+3x+18)$ by $(3-2x+x^2)$

Ans $(5x+6)$

27.   Divide:
   $(7+15x-13x^2+5x^3)$ by $(4-3x+x^2)$

Ans [Quotient: - (5x+2) and Remainder: - (x-1)]

28.   Divide:
   $(10x^4+17x^3-62x^2+30x-3)$ by $(2x^2+7x-1)$

Ans $(5x^2-9x+3)$