Factorize the following:

1. 3x – 9

Solution:

The greatest common factor in the given two terms is 3

$3x – 9$

$3 (x - 3)$

2. 5x - 15x²

Solution:

The greatest common factor in the given two terms is 5x

$5x – 15x^2$

$5x (1 – 3x)$

3. 20a¹²b² – 15a⁸b⁴

Solution:

Greatest common factor in the given two terms is $5a^8b^2$

$20a^{12}b^2 – 15a^8b^4$

$5a^8b^2 (4a^4 - 3b^2)$

4. 72x⁶y⁷ - 96x⁷y⁶

Solution:

Greatest common factor in the given two terms is $24x^6y^6$

$72x^6y^7 - 96x^7y^6$

$24x^6y^6 (3y – 4x)$

5. 20x³ - 40x² + 80x

Solution:

Greatest common factor in the given three terms is 20x

$20x^3 - 40x^2 + 80x$

$20x (x^2 - 2x +4)$

6. 2x³y² - 4x²y³ + 8xy⁴

Solution:

Greatest common factor in the given three terms is $2xy^2$

$2x^3y^2 - 4x^2y^3 - 8xy^4$

$2xy^2 (x^2 - 2xy + 4y^2)$

7. $10m^3n^2 + 15m^4n - 20m^2n^3$

Solution:

Greatest common factor in the given three terms is $5mn^2$

$10m^3n^2 + 15m^4n - 20m^2n^3$

$5m^2n (2mn + 3m^2 - 4n^2)$

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

Solution:

Greatest common factor in the given three terms is a^2b^4

$2a^4b^4 - 3a^3b^5 + 4a^2b^5$

$a^2b^4 (2a^2 - 3ab + 4b)$

9. $28a^2 + 14a^2b^2 - 21a^4$

Solution:

Greatest common factor in the given three terms is $7a^2$

$28a^2 + 14a^2b^2 - 21a^4$

$7a^2 (4a + 2b^2 - 3a^2)$

10. $a^4b - 3a^2b^2 - 6ab^3$

Solution:

Greatest common factor in the given three terms is ab

$a^4b - 3a^2b^2 - 6ab^3$

$ab (a^3 - 3ab - 6b^2)$

11. $2l^2mn - 3lm^2n + 4lmn^2$

Solution:

Greatest common factor in the given three terms is lmn

$2l^2mn - 3lm^2n + 4lmn^2$

$lmn (2l - 3m + 4n)$

12. $x^4y^2 - x^2y^4 - x^4y^4$

Solution:

Greatest common factor in the given three terms is x^2y^2

$x^4y^2 - x^2y^4 - x^4y^4$

$x^2y^2 (x^2 - y^2 - x^2y^2)$

13. $9x^2y + 3axy$

Solution:

Greatest common factor in the given three terms is $3xy$

$9x^2y + 3axy$

$3xy (3x + a)$

14. 16m - 4m²
Solution:
Greatest common factor in the given two terms is 4m
$16m - 4m^2$
$4m (4 - m)$

15. -4a² + 4ab - 4ca
Solution:
Greatest common factor in the given three terms is - 4a
$-4a^2 + 4ab - 4ca$
$-4a (a - b + c)$

16. $x^2yz + xy^2z + xyz^2$
Solution:
Greatest common factor in the given three terms is xyz
$x^2yz + xy^2z + xyz^2$
$xyz (x + y + z)$

17. ax²y + bxy² + cxyz
Solution:
Greatest common factor in the given three terms is xy
$ax^2y + bxy^2 + cxyz$
$xy (ax + by + cz)$