

Factor the following expressions:

1. $3x^3 - 27x$
2. $2n^2 - n - 3$
3. $3x^2 - 5x - 12$
4. $3x^2 - 9x - 12$
5. $x^4 - 1$
6. $x^4 + x$
7. $x^4 - 6x^2 + 9$
8. $2x^4 - x^3 - 6x^2$
9. $12n - 3n^3$
10. $18 - 12x - 6x^2$
11. $3a(t - 2) - 2(2 - t)$
12. $9t^2 - (x - 2y)^2$
13. $3x(n - 1) + 1 - n$
14. $x^2 - y^2 - 4y - 4x$
15. $x^3 - 8y^3$
16. $10t^2 - 15t - 25$
17. $a^2 + 2ab + b^2 - c^2$
18. $a^2 + 2bc - b^2 - c^2$
19. $x^4 + x^3 - x - 1$
20. $(3y - 2.5)^2 - (y + 1.5)^2$
21. $12 - 7nt - 12n^2t^2$
22. $2x^3 + 8x^2 - 2x - 8$
23. $2(x - y)^2 - 3(x - y)$
24. $15xy - 10y^2 - 5x^2$
25. $n(n + 1)(n + 3) - 3n$

Solve the following equations:

26. $3(x - 2)^2 - 2(x + 1)(x - 1) = x(x - 9)$
27. $(2x - 3)(2x + 3) - (2x - 1)^2 = 0$
28. $(3x + 1)(x - 3) - (2x + 1)(x - 2) = x^2$
29. Write the polynomial form of $(4x - y)^3$.
30. Show that for all values of x , $4x^2 - 6x + 1 = 4(x - \frac{3}{4})^2 - \frac{5}{4}$.

1. $3x(x + 3)(x - 3)$
2. $(2n - 3)(n + 1)$
3. $(3x + 4)(x - 3)$
4. $3(x - 4)(x + 1)$
5. $(x^2 + 1)(x + 1)(x - 1)$
6. $x(x + 1)(x^2 - x + 1)$
7. $(x^2 - 3)^2$
8. $x^2(2x + 3)(x - 2)$
9. $3n(2 + n)(2 - n)$
10. $6(3 + x)(1 - x)$
11. $(t - 2)(3a + 2)$
12. $(3t + x - 2y)(3t - x + 2y)$
13. $(n - 1)(3x - 1)$
14. $(x + y)(x - y - 4)$
15. $(x - 2y)(x^2 + 2xy + 4y^2)$
16. $5(2t - 5)(t + 1)$
17. $(a + b + c)(a + b - c)$
18. $(a + b - c)(a - b + c)$
19. $(x + 1)(x - 1)(x^2 + x + 1)$
20. $2(y - 2)(4y - 1)$
21. $(4 + 3nt)(3 - 4nt)$
22. $2(x + 4)(x + 1)(x - 1)$
23. $(x - y)(2x - 2y - 3)$
24. $-5(x - y)(x - 2y)$
25. $n^2(n + 4)$
26. $x = 4\frac{2}{3}$
27. $x = 2\frac{1}{2}$
28. $x = -\frac{1}{5}$
29. $64x^3 - 48x^2y + 12xy^2 - y^3$