

Review of Factoring Polynomials

1. Factor out a Greatest Common Monomial among the terms:

Ex. $2x + 4y + 6 = 2(x + 2y + 3)$

Ex. $-15y^3 - 30y^2 - 45y = -15y(y^2 + 2y + 3)$

2. Factor as a Difference of Squares if there are two terms:

Ex. $a^2 - 9 = (a + 3)(a - 3)$

3. Factor as a Perfect Square Trinomial with 2 like factors:

Ex. $b^2 + 10b + 25 = (b + 5)(b + 5) = (b + 5)^2$

4. Factor as a Trinomial with 2 unlike factors:

Ex. $c^2 + 6c + 5 = (c + 5)(c + 1)$

Ex. $2c^2 + 3c - 5 = (2c + 5)(c - 1)$

5. Factor by Grouping if there are four terms:

Ex. $5de + 10e + 2d + 4 = 5e(d + 2) + 2(d + 2) = (d + 2)(5e + 2)$

Ex. $3x^2 + 6x + 2x + 4 = 3x(x + 2) + 2(x + 2) = (x + 2)(3x + 2)$

6. Factor by Sum of Cubes ($f^3 + g^3$) if there are two terms:

Ex. $f^3 + g^3 = (f + g)(f^2 - fg + g^2)$

7. Factor by Difference of Cubes ($f^3 - g^3$) if there are two terms:

Ex. $f^3 - g^3 = (f - g)(f^2 + fg + g^2)$

8. Factor by using a combination of the aforementioned methods.

Ex. $5ke^4 - 80k + 2he^4 - 32h =$

$5k(e^4 - 16) + 2h(e^4 - 16) =$

$(5k + 2h)(e^4 - 16) =$

$(5k + 2h)(e^2 - 4)(e^2 + 4) =$

$(5k + 2h)(e - 2)(e + 2)(e^2 + 4)$