

Pre-Algebra

Aim: What does it mean to factor a polynomial expression completely?

Do Now:

Factor out the GCF.

a) $2x^2 - 14x + 24$

$2(x^2 - 7x + 12)$

$2(x-4)(x-3)$

b) $2x^2 - 32$

$2(x^2 - 16)$

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

TYPES

GCF → AM

GCF → DOTS

DOTS → DOTS

DOTS → DOTS → DOTS

Factor each polynomial expression into two binomials.

a) $x^2 - 7x + 12$

$(x-4)(x-3)$

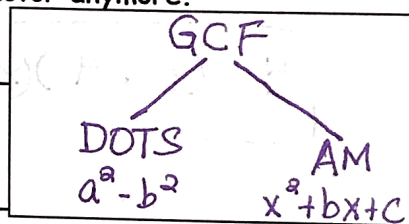
b) $x^2 - 16$

$(x+4)(x-4)$

FACTORING COMPLETELY: Factor until you cannot factor anymore.

1) GCF factoring

2) DOTS or AM factoring



1) $2y^2 + 2y - 4$

$2(y^2 + y - 2)$

$2(y+2)(y-1)$

GCF
↓
AM

2) $5m^2 - 30m + 40$

$5(m^2 - 6m + 8)$

$5(m-2)(m-4)$

3) $2r^2 + 12r + 10$

$2(r^2 + 6r + 5)$

$2(r+1)(r+5)$

4) $3x^2 - 6x - 24$

$3(x^2 - 2x - 8)$

$3(x-4)(x+2)$

5) $6x^2 - 6y^2$

$6(x^2 - y^2)$

$6(x+y)(x-y)$

6) $4a^2 - 36$

$4(a^2 - 9)$

$4(a+3)(a-3)$

FACTOR OUT THE GCF FIRST!

7) $2x^2 - 2x - 12$

$2(x^2 - x - 6)$

$2(x+2)(x-3)$

9) $3x^2 + 27x + 54$

$3(x^2 + 9x + 18)$

$3(x+6)(x+3)$

11) $4x^2 + 12x - 16$

$4(x^2 + 3x - 4)$

$4(x+4)(x-1)$

13) $4x^2 - 24x - 28$

$4(x^2 - 6x - 7)$

$4(x+1)(x-7)$

15) $\frac{4x^3}{4x} - \frac{72x^2}{4x} - \frac{160x}{4x}$

$4x(x^2 - 18x - 40)$

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

8) $5x^2 - 45$

$5(x^2 - 9)$

$5(x-3)(x+3)$

10) $2x^2 - 16x + 14$

$2(x^2 - 8x + 7)$

$2(x-7)(x-1)$

12) $x^4 - 81$

$(x^2+9)(x^2-9)$

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

14) $ax^2 - 18ax + 77a$

$a(x^2 - 18x + 77)$

$a(x-11)(x-7)$

16) $4x^2 - 4$

$4(x^2 - 1)$

$4(x+1)(x-1)$

17) $a^8 - 1$

$(a^4+1)(a^4-1)$

$(a^4+1)(a^2+1)(a^2-1)$

$(a^4+1)(a^2+1)(a+1)(a-1)$

DOTS

↓

DOTS

↓

DOTS



When factoring a binomial or trinomial completely, first factor out the GCF.