

Pre-Algebra

Aim: How do we factor polynomial expressions using the GCF?

Fact Do Now: Identify the GCF of each expression

a. $12x^2 - 4x$

$4x$

b. $27a^3b^2 + 18a^4b$

$9a^3b$

c. $3x^3y + 6xy - 3x^4y^5$

$3xy$

What does it mean to factor a polynomial expression?

A polynomial expression written as a product is written in factored form

Example: Factor $30x^4 + 5x^3 - 25x^2$

Steps:

1st: Find the gcf of the coefficients.

Ask yourself: Is there a number that I can divide 30, 5, and 25 by evenly?

2nd: Find the gcf of the variables.

Ask yourself: Can I factor out a variable from every term?

3rd: Factor out the GCF and rewrite the polynomial as a _____ of a monomial and polynomial.

Divide each term of the polynomial by the GCF.

GCF: $5x^2$ $\frac{30x^4 + 5x^3 - 25x^2}{5x^2} =$

The factored form of $30x^4 + 5x^3 - 25x^2$ is $5x^2(6x^2 + x - 5)$

Check: Distribute to make sure that you have factored the polynomial expression correctly.

NOW IT'S YOUR TURN -

Rewrite each polynomial expression by in factored form by factoring out the GCF.

1. $\frac{12x}{12} + \frac{24}{12}$

$12(x + 2)$

2. $\frac{16x^2}{8x} - \frac{24x}{8x}$

$8x(2x - 3)$

3. $\frac{9x^3}{3x} + \frac{6x^2}{3x} - \frac{27x}{3x}$

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

4. $\frac{36x^5}{18x^3} - \frac{54x^3y^2}{18x^3}$

$18x^3(2x^2 - 3y^2)$

5. $\frac{18x^2y}{6xy} - \frac{6xy}{6xy}$

$6xy(3x - 1)$

6. $\frac{12x^2y^3}{4x^2y^3} + \frac{16x^2y^5}{4x^2y^3}$

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