

3.1: Factoring Using GCF & Difference of 2 squares

◦ Greatest common factor: largest term that can be divided out of every term in the polynomial

◦ Ex 1) Factor: $\frac{24x^4}{6x^2} - \frac{12x^3}{6x^2} + \frac{18x^2}{6x^2}$ GCF: $6x^2$

$6x^2(4x^2 - 2x + 3)$

Ex 2) Factor: $\frac{252a^7b^3}{12a^4b^2} + \frac{60a^6b^2}{12a^4b^2} - \frac{108a^4b^2}{12a^4b^2}$ GCF: $12a^4b^2$

$12a^4b^2(21a^3b + 5a^2 - 9)$

you try: Factor: $\frac{14x^3y^2z}{xy} + \frac{7x^2yz}{xy} - \frac{xy}{xy}$ $y_1 = 252/x$
 $y_2 = 60/x$
 $y_3 = -108/x$

GCF: $1xy$

$xy(14x^2yz + 7xz - y^2)$

* look at table for whole #

Ex 3) $2x^3 + 9$

not factorable!

GCF: 1

$2x^3 + 9$

* GCF always matches sign of 1st term!

Ex 4) Factor: $\frac{-8x^3}{-2x} + \frac{6x}{-2x}$

GCF: $-2x$

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

Difference of Perfect Squares

subtraction

↳ 1, 4, 9, 16, 25, ...

EX 5) Factor: $x^2 - 9$

$$\sqrt{x^2} = x \quad \sqrt{9} = 3$$

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

EX 6) Factor: $16m^2 - 1$

$$\sqrt{16m^2} = 4m \quad \sqrt{1} = 1$$

$$(4m + 1)(4m - 1)$$

EX 7) Factor: $\frac{128k^2}{2} - \frac{50}{2}$

GCF: 2

$$2(64k^2 - 25)$$

$$\sqrt{64k^2} = 8k \quad \sqrt{25} = 5$$

$$2(8k + 5)(8k - 5)$$