

October 3

Mixed Factoring

When a problem says "Factor"

① if there is a GCF, factor it out

② look at number of terms

2 terms \rightarrow Is it D.O.T.S.?

3 terms \rightarrow Is it x^2, x , plain number?

Ex1 Factor: $\frac{16x^4}{4x} - \frac{4x^2}{4x} - \frac{12x}{4x}$ GCF: $4x$

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

Ex2 Factor: $\frac{12x^3}{3x} + \frac{24x^2}{3x} + \frac{9x}{3x}$ GCF: $3x$

$$3x(4x^2 + 8x + 3)$$

$$4x^2 \cdot 3 = 12x^2$$

$$\begin{array}{c} \wedge \\ \boxed{2x + 6x} = 8x \end{array}$$

Factors of 12:

$$2 \cdot 6$$

$$\begin{array}{c|c} 4x^2 + 2x & +6x + 3 \\ \hline 2x & 2x \\ \hline & 3 & 3 \end{array}$$

$$(2x)(2x+1) \quad (3)(2x+1)$$

$$3x(2x+1)(2x+3)$$

Ex3 Factor: $\frac{4m^2}{4} - \frac{16}{4}$ GCF: 4

$$4(m^2 - 4)$$

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

$$\boxed{4(m+2)(m-2)}$$

Ex4 Factor: $\frac{27x^3}{3x} + \frac{48x}{3x}$ GCF: 3x

$$\boxed{3x(9x^2 + 16)}$$

Ex5 Factor: $\frac{-6x^3y}{-2x} - \frac{12x^2}{-2x} - \frac{14xy}{-2x}$ GCF: -2x

$$\boxed{-2x(3x^2y + 6x + 7y)}$$