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Greatest Common Factor

• Largest factorable quantity that can be taken out of an expression

$$\begin{array}{l} 2x + x \\ \downarrow \\ x(2 + 1) \end{array}$$

$$\begin{array}{l} 16x^2 + 4x + x \\ \downarrow \\ x(16x + 4 + 1) \end{array}$$

$$\begin{array}{l} 16x^2 + 4x + 4 \\ \downarrow \\ 4(4x^2 + x + 1) \end{array}$$

$$\begin{array}{l} 16x^3 + 4x^2 + 2x \\ \downarrow \\ 2x(8x^2 + 2x + 1) \end{array}$$

$$\begin{array}{l} 25x^3 + 125x^2 \\ \downarrow \\ 25x^2(x + 5) \end{array}$$

$$\begin{array}{l} 4x^3 + 43x^2 + 30 \\ x(4x^2 + 43x + 30) \end{array}$$

↓

$$\begin{array}{l} 4x^2 + 40x + 3x + 30 \\ (4x^2 + 40x)(3x + 30) \end{array}$$

$$4x(x + 10) \quad 3(x + 10)$$

$$\boxed{(4x + 3)(x + 10)}$$