

DOTS

$$x^2 - 36 = 0$$

$$\begin{array}{cc} x & 6 \\ \downarrow & \downarrow \\ (x+6)(x-6) = 0 \end{array}$$

$$\begin{array}{l} x+6=0 \\ -6 \quad -6 \\ \hline x = -6 \end{array} \quad \begin{array}{l} x-6=0 \\ +6 \quad +6 \\ \hline x = 6 \end{array}$$

TRI

$$x^2 - 8x - 20 = 0$$

$$\begin{array}{r} -1 \quad 20 \\ 1 \quad -20 \\ -2 \quad 10 \\ 2 \quad -10 \rightarrow -8 \\ -4 \quad 5 \\ 4 \quad 5 \end{array}$$

$$(x+2)(x-10) = 0$$

$$\begin{array}{l} x+2=0 \\ -2 \quad -2 \\ \hline x = -2 \end{array} \quad \begin{array}{l} x-10=0 \\ +10 \quad +10 \\ \hline x = 10 \end{array}$$

GCF

$$5x^2 - 20x = 0$$

$$5x \cdot x \quad 2 \cdot 2 \cdot 5x$$

$$5x(x-4) = 0$$

$$\begin{array}{l} 5x=0 \\ \frac{5x}{5} = \frac{0}{5} \\ x = 0 \end{array} \quad \begin{array}{l} x-4=0 \\ +4 \quad +4 \\ \hline x = 4 \end{array}$$

GROUP

$$(2x^3 + 3x^2)(2x-3) = 0$$

$$x^2(2x+3) - 1(2x+3) = 0$$

DOTS

$$(2x+3)(x^2-1) = 0$$

$$(2x+3)(x+1)(x-1) = 0$$

$$\begin{array}{l} 2x+3=0 \\ -3 \quad -3 \\ \hline 2x = -3 \\ \frac{2x}{2} = \frac{-3}{2} \\ x = -\frac{3}{2} \end{array} \quad \begin{array}{l} x+1=0 \\ -1 \quad -1 \\ \hline x = -1 \end{array} \quad \begin{array}{l} x-1=0 \\ +1 \quad +1 \\ \hline x = 1 \end{array}$$

TRICKY

$$3x^2 + 11x - 4 = 0$$

$$\begin{array}{r} -1 \quad 12 \\ 1 \quad -12 \\ -2 \quad 6 \\ 2 \quad -6 \\ -3 \quad 4 \\ 3 \quad -4 \end{array}$$

$$(3x^2 - 1x) + (12x - 4) = 0$$

$$x(3x-1) + 4(3x-1) = 0$$

$$(3x-1)(x+4) = 0$$

$$\begin{array}{l} 3x-1=0 \\ +1 \quad +1 \\ \hline 3x = 1 \\ \frac{3x}{3} = \frac{1}{3} \\ x = \frac{1}{3} \end{array} \quad \begin{array}{l} x+4=0 \\ -4 \quad -4 \\ \hline x = -4 \end{array}$$

Steps for Solving by Factoring.

- ① Make sure the equation equals ZERO
- ② Identify the factoring method (GCF, DOTS, TRI, GROUP, TRICKY)
- ③ FACTOR
- ④ Set each factor equal to ZERO and solve for x