

# Solving Quadratic Equations:

By factoring and zero product property.

Ex:  $4x^2 + 4 = 17x$

$$4x^2 - 17x + 4 = 0 \quad (\text{put in order})$$

$$4x^2 - 16x - 1x + 4 = 0$$

$$\underline{4x}(x-4) - \underline{1}(x-4) = 0$$

$$(\underline{4x-1})(x-4) = 0$$

$$4x-1=0 \quad | \quad x-4=0$$

$$\cancel{4}x = \frac{1}{\cancel{4}} \quad | \quad x = 4$$

$$x = \frac{1}{4}$$

Roots are  $x = \frac{1}{4}$  and  $x = 4$

$$\frac{16}{-16|-1}$$

factoring

zero product property.

Ex ② Solve  $5x^2 - 25x = 0$

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

$$5x = 0 \quad | \quad x - 5 = 0$$

$$x = 0 \quad | \quad x = 5$$

Roots are  $x=0, x=5$

Ex ③ Solve:  $5x^2 - 80 = 0$

$$5(x^2 - 16) = 0$$

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

$$x - 4 = 0 \quad | \quad x + 4 = 0$$


$$x = 4 \quad | \quad x = -4$$

Roots are  $x = \pm 4$

Ex ④ Solve:  $5x^2 + 9 - 18x = 0$

re order:  $5x^2 - 18x + 9 = 0$

$$\begin{array}{r|l} 45 & \\ -1 & -45 \\ -3 & -15 \end{array}$$

  $- 3x + 9 = 0$

$$5x(x-3) - 3(x-3) = 0$$

$$(x-3)(5x-3) = 0$$

$$x-3=0 \quad | \quad 5x-3=0$$

$$x=3 \quad | \quad \frac{5x=3}{5} \quad \frac{3}{5}$$

$$x = \frac{3}{5}$$

Roots are  $x=3$  and  $x=\frac{3}{5}$