

Key

5/4/20

### Zero Product Property

$$ax^2 + bx + c = 0$$

$$(x-b)(x-c) = 0$$

$$x = b \quad x = c$$

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

$x+3=0$	$x-4=0$	$\{-3, 4\}$
$-3 \quad -3$	$+4 \quad +4$	
$\boxed{x = -3}$	$\boxed{x = 4}$	

2)  $x^2 + 8x + 15 = 0$

$(x+5)(x+3) = 0$	$\boxed{\{-5, -3\}}$	1) Set = 0
$x+5=0$	$x+3=0$	2) Factor
$-5 \quad 5$	$-3 \quad -3$	3) Set each binomial = 0
$\boxed{x = -5}$	$\boxed{x = -3}$	4) Solve

3)  $5x^2 - 30x = 0$

$\bar{5} \quad \bar{5} \quad \bar{5}$	$x^2 - 6x = 0$	$\boxed{\{0, 6\}}$	1) Look for GCF
$x(x-6) = 0$	$x-6=0$		2) Divide by coefficient if possible
$\boxed{x = 0}$	$+6 \quad +6$		3) Never divide away a variable
	$\boxed{x = 6}$		4) Factor
			5) Set = 0
			6) Solve

4)  $5x^2 - 11x + 2 = 0$

$+2 \quad +2$	$5x^2 - 11x + 2 = 0$	$\boxed{\{5, 2\}}$	1) Set = 0
$\bar{5} \quad \bar{5}$	$(x-10)(-1) = 0$		2) Factor
$(x-2)(5x-1) = 0$	$x-2=0$		3) Don't forget to divide by a
$+2 \quad +2$	$+1 \quad +1$		
$\boxed{x = 2}$	$\frac{5x-1}{5} \quad x = \frac{1}{5}$		

$$5) c(c-11) = -18$$

$$c^2 - 11c = -18$$

$$c^2 - 11c + 18 = 0$$

$$(c-9)(c-2) = 0$$

$$c-9=0 \quad c-2=0$$

$$+9 \quad +9 \quad +2 \quad +2$$

$$\boxed{c=9} \quad \boxed{c=2}$$

$$\boxed{\{2, 9\}}$$

1) Distribute

2) Then move c to left

3) Finish

$$6) 2x^3 = 9x^2 - 4x$$

$$2x^3 - 9x^2 + 4x = 0$$

$$x(2x^2 - 9x + 4) = 0$$

$$x(x-8)(x-1/2) = 0$$

$$\bar{2} \quad \bar{2}$$

$$x(x-4)(2x-1) = 0$$

$$x=0 \quad x-4=0 \quad 2x-1=0$$

$$x=0 \quad x=4 \quad x=1/2$$

$$\boxed{\{0, 4, 1/2\}}$$

1) Set = 0

2) Factor trinomial

3) Simplify

4) Set all 3 = 0

5) Solve

$$7) -8n^2 - 16n - 6 = 0$$

$$-2(4n^2 + 8n + 3) = 0$$

$$(n+6/4)(n+2/4) = 0$$

$$\bar{4} \quad \bar{4}$$

$$(n+3/2)(n+1/2) = 0$$

$$2n+3=0 \quad 2n+1=0$$

$$n=-3/2 \quad n=-1/2$$

$$\boxed{\{-3/2, -1/2\}}$$

1) Leading coeff can be -

$$8) 63m^2 - 31m - 10 = 0$$

$$(m-4/3)(m+14/3) = 0$$

$$\bar{63} \quad \bar{63}$$

$$(m-5/7)(m+2/9) = 0$$

$$7m-5=0 \quad 9m+2=0$$

$$\boxed{m=5/7} \quad \boxed{m=-2/9}$$

$$\boxed{\{-2/9, 5/7\}}$$