1) One side = 0
2) Factor ( )( )
3) Set each factor = 0
4) Solve each equation

Honors Algebra 2
Solve by Factoring Quiz Review

Name Key

Solve each equation by factoring. To get full credit, show the factors. If it is not factorable, write "not factorable". * Many ways to factor, but I will show "guess and check" method

1) $x^2 + 12x + 32 = 0$

+ to + / * to + / + +

a: 1 (1 1)

c: 32 (1 32, 2 16, 4 8)

$(x+4)(x+8)=0$

$4x + 8x = 12x$ ☺

$x+4=0$ $\quad x+8=0$

$-4\ -4$ $\quad -8\ -8$

$x=-4$ $\quad x=-8$

2) $n^2 + 2n - 24 = 0$

a: 1 (1 1)

+ to + / * to − / + −

c: 24 (1 24, 2 12, 3 8, 4 6)

$(n+6)(n-4)=0$

$6n - 4n = 2n$ ☺

$n+6=0$ $\quad n-4=0$

$-6\ -6$ $\quad +4\ +4$

$n=-6$ $\quad n=4$

3) $n^2 = 20 - n$

$+n\ -20\ \ -20\ +n$

$n^2 + n - 20 = 0$

+ to + / * to − / + −

c: 20 (1 20, 2 10, 4 5)

a: 1 (1 1)

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

$5n - 4n = 1n$ ☺

$n+5=0$ $\quad n-4=0$

$-5\ -5$ $\quad +4\ +4$

$n=-5$ $\quad n=4$

4) $y^2 + 9y = -18$

$+18\ \ +18$

$y^2 + 9y + 18 = 0$

a: 1 (1 1)

+ to + / * to + / + +

c: 18 (1 18, 2 9, 3 6)

$(y+3)(y+6)=0$

$3y + 6y = 9y$ ☺

$y+3=0$ $\quad y+6=0$

$-3\ -3$ $\quad -6\ -6$

$y=-3$ $\quad y=-6$

5) $16x^2 - 25 = 0$

+ to + / * to − / + −

a: 16 (1 16, 2 8, 4 4)

c: 25 (1 25, 5 5)

$16x^2 + 0x - 25 = 0$

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

$20x - 20x = 0x$ ☺

$4x+5=0$ $\quad 4x-5=0$

$-5\ -5$ $\quad +5\ +5$

$\frac{4x}{4} = \frac{-5}{4}$ $\quad \frac{4x}{4} = \frac{5}{4}$

$x=-5/4$ $\quad x=5/4$

6) $28x^2 + 232x + 64 = 0$

4

a: 7 (1 7)

+ to + / * to + / + +

c: 16 (1 16, 2 8, 4 4)

$4(7x^2 + 58x + 16) = 0$

$4(x+8)(7x+2)=0$

$56x + 2x = 58x$ ☺

$4 \neq 0$ $\quad x+8=0$ $\quad 7x+2=0$

$-8\ -8$ $\quad -2\ -2$

$x=-8$ $\quad \frac{7x}{7} = \frac{-2}{7}$

$x=-2/7$

1) One side = 0
2) Factor ( )( )
3) Set each factor = 0
4) Solve each equation

7) $9y^2 - 9y - 40 = 0$

a b+ c*

+ to − / * to − / + −

a: 9 → 1 9, 3 3

c: 40 → 1 40, 2 20, 4 10, 5 8

$(3y-8)(3y+5)=0$

$-24y + 15y = -9y$ ☺

$3y-8=0$ $+8\ +8$ → $\frac{3y}{3} = \frac{8}{3}$ → $y = 8/3$

$3y+5=0$ $-5\ -5$ → $\frac{3y}{3} = \frac{-5}{3}$ → $y = -5/3$

8) $n^2 + 2n + 14 = -4$

$+4\ \ +4$

$n^2 + 2n + 18 = 0$

a b+ c*

+ to + / * to + / + +

a: 1 → 1 1

c: 18 → 1 18, 2 9, 3 6

$(n+1)(n+18)=0$

$+18n + 1n = 19n$ ☹

$(n+2)(n+9)=0$

$+9n + 2n = 11n$ ☹

$(n+3)(n+6)=0$

$+6n + 3n = 9n$ ☹

NOT FACTORABLE

9) $2m^2 + 5m + 3 = 0$

a b+ c*

+ to + / * to + / + +

a: 2 → 1 2

c: 3 → 1 3

$(2m+3)(m+1)=0$

$+2m + 3m = 5m$ ☺

$2m+3=0$ $-3\ -3$ → $\frac{2m}{2} = \frac{-3}{2}$ → $m = -3/2$

$m+1=0$ $-1\ -1$ → $m = -1$

10) $35x^2 - 78x = 90 - 3x$

$+3x\ \ -90\ \ -90\ \ +3x$

$5[35x^2 - 75x - 90 = 0]$

a b+ c*

$5(7x^2 - 15x - 18) = 0$

+ to − / * to − / + −

a: 7 → 1 7

c: 18 → 1 18, 2 9, 3 6

$5(7x+6)(x-3)=0$

$-21x + 6x = -15x$ ☺

$5 \neq 0$

$7x+6=0$ $-6\ -6$ → $\frac{7x}{7} = \frac{-6}{7}$ → $x = -6/7$

$x-3=0$ $+3\ +3$ → $x = 3$

11) $21n^2 - 112n + 70 = 7n$

$-7n\ \ -7n$

$7[3n^2 - 17n + 10 = 0]$

a b+ c*

$7(3n^2 - 17n + 10) = 0$

+ to − / * to + / − −

a: 3 → 1 3

c: 10 → 1 10, 2 5

$7(3n-2)(n-5)=0$

$-2n + -15n = -17n$ ☺

$7 \neq 0$

$3n-2=0$ $+2\ +2$ → $\frac{3n}{3} = \frac{2}{3}$ → $n = 2/3$

$n-5=0$ $+5\ +5$ → $n = 5$

12) $11x^2 + 3x + 5 = 5 + 4x + 6x^2$

$-6x^2\ -4x\ -5\ \ -5\ -4x\ -6x^2$

a b+ c*

$5x^2 - 1x + 0 = 0$

+ to − / * to + / − −

a: 5 → 1 5

c: 0 → 0 0, 0 1, 0 2, ⋮

$(5x-1)(x-0)=0$

$-1x + 0x = -1x$ ☺

$5x-1=0$ $+1\ +1$ → $\frac{5x}{5} = \frac{1}{5}$ → $x = 1/5$

$x-0=0$ $+0\ +0$ → $x = 0$

- OR -

$x[5x^2 - 1x = 0]$

$x(5x-1)=0$

$x=0$

$5x-1=0$ $+1\ +1$ → $\frac{5x}{5} = \frac{1}{5}$ → $x = 1/5$

***Check for solutions on graysonmath.com!!!

☺