Name:_____ Class #:_____

FACTORING REVIEW: Special Polynomial Products (p. 466 – 474)

- □ The AC Method to factoring: $ax^2 + bx + c$ (p. 458 - 459)
- □ Factoring Perfect Square Trinomials (p. 467)
- □ Factoring a Difference of Squares (p. 468)
- □ Algebraic and graphical approach to solving $ax^2 + bx + c = 0$ (p. 472)

Solve each of the following equations by factoring. Show all steps.

1. $m^2 - 81 = 0$

$\Rightarrow \quad m^2 - 9^2 = 0$

$\Rightarrow \quad (m - 9) \cdot (m + 9) = 0$

$\Rightarrow \quad m - 9 = 0 \quad$ or $\quad m + 9 = 0$

$\Rightarrow \quad \boxed{m = 9} \quad$ or $\quad \boxed{m = -9}$

2. $2x^2 + 5x - 4 = 8$

$\Rightarrow \quad 2x^2 + 5x - 12 = 0$

$a = 2, \; b = 5, \; c = -12$

Multiply -24

8×-3

5

Add

$5x = 8x - 3x$

$\Rightarrow \quad 2x^2 + 8x - 3x - 12 = 0$

$\Rightarrow \quad 2x \cdot (x + 4) - 3 \cdot (x + 4) = 0$

$\Rightarrow \quad (2x - 3) \cdot (x + 4) = 0$

$\Rightarrow \quad 2x - 3 = 0 \quad$ or $\quad x + 4 = 0$

$\Rightarrow \quad \boxed{x = 3/2} \quad$ or $\quad \boxed{x = -4}$

Name:_____ Class #:_____

3. $-4a^2 + 49 = 0$

$\Rightarrow \quad 49 - 4a^2 = 0$

$\Rightarrow \quad 7^2 - (2a)^2 = 0$

$\Rightarrow \quad (7 - 2a) \cdot (7 + 2a) = 0$

$\Rightarrow \quad 7 - 2a = 0 \quad$ or $\quad 7 + 2a = 0$

$\Rightarrow \quad 7 = 2a \quad$ or $\quad 2a = -7$

$\Rightarrow \quad \boxed{a = 7/2} \quad$ or $\quad \boxed{a = -7/2}$

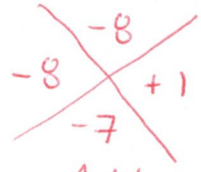
4. $2x^2 - 8x - 1 = 3 - x$

$\Rightarrow \quad 2x^2 - 7x - 4 = 0$

$a=2, \quad b=-7, \quad c=-4$

Side note

Multiply



Add

$-7x = -8x + x$

$\Rightarrow \quad 2x^2 - 8x + x - 4 = 0$

$\Rightarrow \quad 2x(x - 4) + 1 \cdot (x - 4) = 0$

$\Rightarrow \quad (2x + 1) \cdot (x - 4) = 0$

$\Rightarrow \quad 2x + 1 = 0 \quad$ or $\quad x - 4 = 0$

$\Rightarrow \quad \boxed{x = -1/2} \quad$ or $\quad \boxed{x = 4}$

10. Consider the equation

$$2x^2 - 8x - 1 = 3 - x.$$

Solve this equation using two different methods:

A. An algebraic technique.

$2x^2 - 8x - 1 = 3 - x$

$\Rightarrow 2x^2 - 7x - 4 = 0$

$a = 2,\ b = -7,\ c = -4$

Multiply: $-8 \cdot +1 = -8$

Add: $-8 + (-7) = -7$

$\Rightarrow 2x^2 - 8x + x - 4 = 0$

$\Rightarrow 2x \cdot (x-4) + 1 \cdot (x-4) = 0$

$\Rightarrow (2x+1) \cdot (x-4) = 0$

$\Rightarrow 2x + 1 = 0$ or $x - 4 = 0$

$\Rightarrow \boxed{x = -\frac{1}{2}}$ or $\boxed{x = 4}$

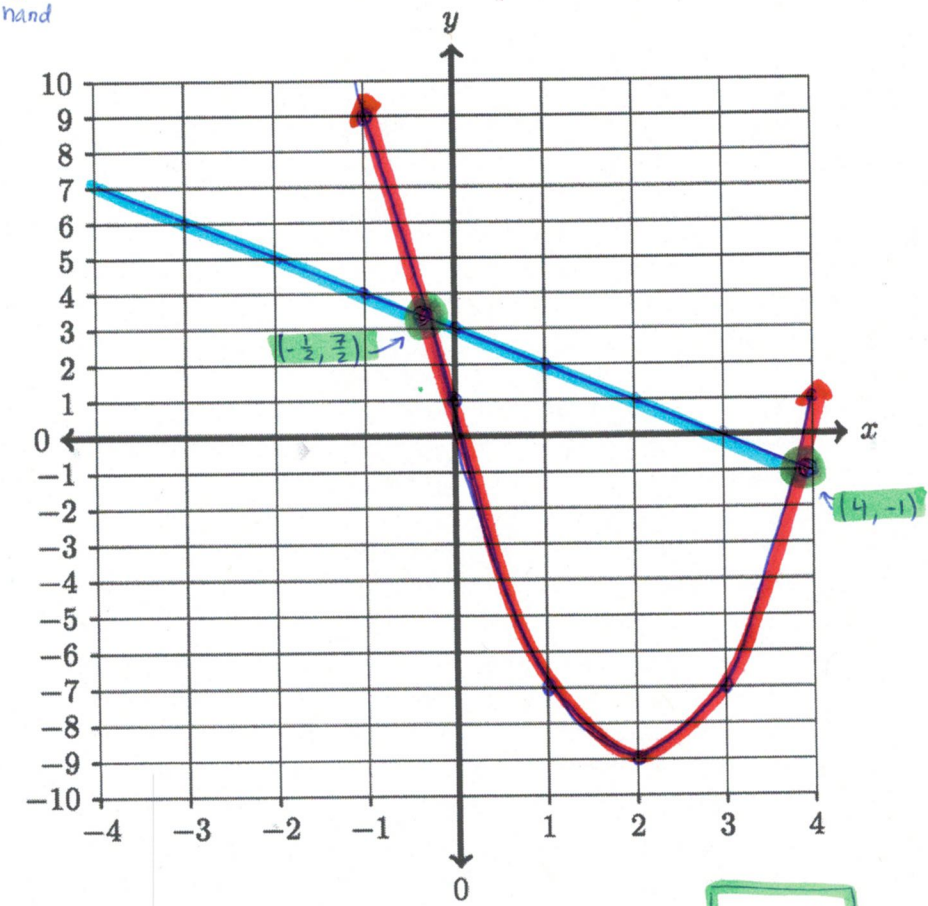
B. A graphical technique

We begin by identifying and graphing the functions on the left and right hand side of the equals signs:

$\boxed{y_1 = 2x^2 - 8x - 1}$

$\boxed{y_2 = 3 - x}$

x	$y_1 = 2x^2 - 8x - 1$	$y_2 = 3 - x$
-1	9	4
-0.5	3.5	3.5
0	-1	3
1	-7	2
2	-9	1
3	-7	0
4	-1	-1
5	9	-2



Left point of intersection: $(-\frac{1}{2}, \frac{7}{2}) \Rightarrow \boxed{x = -\frac{1}{2}}$

Right point of intersection: $(4, -1) \Rightarrow \boxed{x = 4}$

Name:_____ Class #:_____

6. Consider the equation $2x^2 + 5x - 4 = 8$.

A. Identify and graph the function on the left-hand side of the equals sign: $y_1 = 2x^2 + 5x - 4$

B. Identify and graph the function on the right hand side of the equals sign: $y_2 = 8$

F. Find and label the points of intersection on the graph below. Make sure to write each point of intersection as an ordered pair in the form (x, y).

C. Identify the x – value for each point of intersection.

D. Identify the solution(s) to this equation: $x = -4$ or $x = 1.5$

Left P.O.I $(-4, 8)$

Right P.O.I. $(1.5, 8)$

x	Left-hand side: $y_1 = 2x^2+5x-4$	Right-hand side: $y_2 = 8$
−5	21	8
−4	8	8
−3	−1	8
−2	−6	8
−1	−7	8
0	−4	8
1	3	8
1.5	8	8
2	14	8