MTH1W – Unit 8: Algebra II Name: Mr. Hagen

Lesson #8.4b: Factoring Trinomials Date: May 13, 2022.

Learning Goal: We are learning to factor more complicated trinomials.

Let's add another wrinkle to our lesson and try factoring some more complicated trinomials. Maybe some of these can't even be factored at all! <duh duh duh!!!!>

Factor each completely.

1) $5n^2 + 47n - 30$ (A, B, C)

$= \underbrace{5n^2 - 3n}_{n} \underbrace{+ 50n - 30}_{+10}$

$= n(5n-3) + 10(5n-3)$

$= (n+10)(5n-3)$

5x-30

M: −150 (A×C)

A: +47 (B)

−1, 150

−2, 75

$\boxed{-3, 50}$ = 47

2) $9k^2 + 8k + 8$

Not Factorable

M: 72

A: 8

1, 72 = 73

2, 36 = 38

3, 24 = 27

4, 18 = 22

6, 12 = 18

8, 9 = 17

*Always first look for a GCF

3) $3a^2 - 18a - 48$ GCF of 3

M: −16
A: −6

1, −16
$\boxed{2, -8}$
4, −4

$= 3(1a^2 - 6a - 16)$

$= 3(\underbrace{a^2 + 2a}_{a} \underbrace{- 8a - 16}_{-8})$

$= 3(a-8)(a+2)$

$= 3(a(a+2) - 8(a+2))$

$(3a-24)(a+2)$

or

$(a-8)(3a+6)$

$18a^2 - 32$
$= 2(9a^2 - 16)$

4) $24k^2 - 100k + 56$

m: 84
A: −25

−1, −84
−2, −42
−3, −28
−4, −21

$= 4(6k^2 - 25k + 14)$

$= 4(\underbrace{6k^2 - 4k}_{2k} \underbrace{- 21k + 14}_{-7})$

$= 4(2k-7)(3k-2)$

5) $9a^2 - 16$

M: −144
A: 0

$= 9a^2 \boxed{+0}a - 16$

$= \underbrace{9a^2 - 12a}_{3a} \underbrace{+ 12a - 16}_{+4}$

$= (3a+4)(3a-4)$

144 is a square #
$\sqrt{144} = 12$
$\therefore -12, 12$

Difference of squares

6) $25b^2 - 90b + 81$

M: 2025
A: −90

−1, −2025
−3, −675
−5, −405
−9, −225
−15, −135
−25, −81
−27, −75
−45, −45

$= \underbrace{25b^2 - 45b}_{5b} \underbrace{- 45b + 81}_{-9}$

$= (5b-9)(5b-9)$

$= (5b-9)^2$

Perfect Square

Success Criteria

- I can set up my factoring by finding a factor pair that multiplies to the first and last terms (A×C), but adds to the middle term (B).
- I can use "Factoring by Decomposition" to factor a trinomial