

Intermediate Algebra

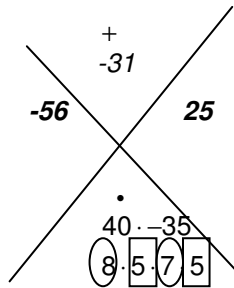
Skill Builder # PF – 7

Factoring Two-Variable Quadratic Trinomials with Leading Coefficient Different from 1 Any Method

Examples

1. $40x^2 - 31xy - 35y^2$

Solution:



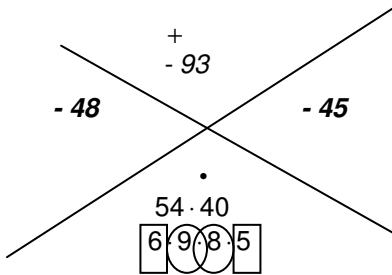
$\Rightarrow$ Thus, $\boxed{25}$ and $\textcircled{-56}$ are the two numbers that multiply to $40 \cdot -35$ and that add up to -31 .

Grouping Method:

Rewrite $40x^2 - 31xy - 35y^2$ as $40x^2 - 56xy + 25xy - 35y^2$ and factor by grouping:

$$\begin{aligned} & (40x^2 - 56xy) + (25xy - 35y^2) \\ &= 8x(5x - 7y) + 5y(5x - 7y) \\ &= (5x - 7y)(8x + 5y) \end{aligned}$$

2. $54m^2 - 93mn + 40n^2$



$\Rightarrow$ Thus, $\boxed{-48}$ and $\textcircled{-45}$ are the two numbers that multiply to $54 \cdot 40$ and that add up to -93 .

Bottoms – Up Method:

$$\begin{aligned} -\frac{48}{54} &= -\frac{8}{9} \Rightarrow (9m - 8n) \text{ is one factor} \\ -\frac{45}{54} &= -\frac{5}{6} \Rightarrow (6m - 5n) \text{ is the other factor} \end{aligned}$$

Thus, $54m^2 - 93mn + 40n^2 = (9m - 8n)(6m - 5n)$.

Intermediate Algebra

Skill Builder # PF – 7

**Factoring Two-Variable Quadratic Trinomials with Leading Coefficient Different from 1
Any Method**

Factor the given quadratic trinomial.

1. $12x^2 - xy - 63y^2$

2. $18x^2 - 45xy - 8y^2$

3. $56y^2 - 81xy + 28x^2$

4. $48y^2 + 2xy - 63x^2$

5. $32n^2 + 92np + 45p^2$

6. $30p^2 + 31pm - 44m^2$

7. $96a^2 - 44ab - 35b^2$

8. $56b^2 - 109ab + 44a^2$

Intermediate Algebra

Skill Builder # PF – 7

**Factoring Two-Variable Quadratic Trinomials with Leading Coefficient Different from 1
Any Method**

Answers

1. $(4x + 9y)(3x - 7y)$

2. $(6x + y)(3x - 8y)$

3. $(7y - 4x)(8y - 7x)$

4. $(6y + 7x)(8y - 9x)$

5. $(8n + 5p)(4n + 9p)$

6. $(5p - 4m)(6p + 11m)$

7. $(12a + 5b)(8a - 7b)$

8. $(8b - 11a)(7b - 4a)$

Prepared by: Dr. Teresa V. Sutcliffe, Winter 2010