

Unit 13 Review – Factoring Polynomial Expressions (3 METHODS)

GCF FACTORING

Factor each polynomial by factoring out the GCF.

$$1. \frac{3x}{3} + \frac{12}{3} \quad \text{GCF: } 3$$

$$x + 4$$

$$3(x + 4)$$

$$2. \frac{16x^2}{4} - \frac{12x}{4} + \frac{24}{4} \quad \text{GCF: } 4$$

$$4x^2 - 3x + 6$$

$$4(4x^2 - 3x + 6)$$

$$3. \frac{25x}{25} - \frac{50y}{25} \quad \text{GCF: } 25$$

$$1x - 2y$$

$$25(x - 2y)$$

$$4. \frac{40x^2}{10} - \frac{100x}{10} - \frac{10}{10} \quad \text{GCF: } 10$$

$$4x^2 - 10x - 1$$

$$10(4x^2 - 10x - 1)$$

AM FACTORING

Factor each trinomial into two binomials by using the AM method.

$$5. x^2 + 16x + 15 \quad \begin{array}{l} \text{Multiply to } 15 \\ \text{Add to } 16 \end{array}$$

1, 15	-1, -15
3, 5	-3, -5

$$(x + 1)(x + 15)$$

or

$$(x + 15)(x + 1)$$

$$6. x^2 + 6x - 7 \quad \begin{array}{l} \text{Multiply to } -7 \\ \text{Add to } 6 \end{array}$$

1, -7	-1, 7
-1, 7	1, -7

$$(x - 1)(x + 7)$$

or

$$(x + 7)(x - 1)$$

$$7. x^2 + 1x - 56 \quad \begin{array}{l} \text{Multiply to } -56 \\ \text{Add to } 1 \end{array}$$

1, -56	-1, 56
2, -28	-2, 28
4, -14	-4, 14
7, -8	-7, 8

$$(x - 7)(x + 8)$$

or

$$(x + 8)(x - 7)$$

$$8. x^2 - 14x + 40 \quad \begin{array}{l} \text{Multiply to } 40 \\ \text{Add to } -14 \end{array}$$

1, 40	-1, -40
2, 20	-2, -20
4, 10	-4, -10
5, 8	-5, -8

$$(x - 4)(x - 10)$$

or

$$(x - 10)(x - 4)$$

9. $x^2 - 9x - 36$ Multiply to -36 1, -36 -1, 36
 Add to -9 2, -18 -2, 18
 3, -12 -3, 12
 4, -9 -4, 9

$(x + 3)(x - 12)$

or

$(x - 12)(x + 3)$

10. $x^2 - 23x + 42$ Multiply to 42
 Add to -23

 1, 42 -1, -42
 2, 21 **-2, -21**
 3, 14 -3, -14
 6, 7 -6, -7

$(x - 2)(x - 21)$

or

$(x - 21)(x - 2)$

D.O.T.S FACTORING

Factor each binomial (D.O.T.S) into two binomials.

11. $x^2 - 64$ $\sqrt{x^2} = x$
 $\sqrt{64} = 8$

$(x + 8)(x - 8)$

or

$(x - 8)(x + 8)$

12. $x^2 - 144$ $\sqrt{x^2} = x$
 $\sqrt{144} = 12$

$(x + 12)(x - 12)$

or

$(x - 12)(x + 12)$

13. $x^2 - 81$ $\sqrt{x^2} = x$
 $\sqrt{81} = 9$

$(x + 9)(x - 9)$

or

$(x - 9)(x + 9)$

14. $4x^2 - 25$ $\sqrt{4x^2} = 2x$
 $\sqrt{25} = 5$

$(2x + 5)(2x - 5)$

or

$(2x - 5)(2x + 5)$

15. $36x^2 - 1$ $\sqrt{36x^2} = 6x$
 $\sqrt{1} = 1$

$(6x + 1)(6x - 1)$

or

$(6x - 1)(6x + 1)$

16. $100x^2 - 9$ $\sqrt{100x^2} = 10x$
 $\sqrt{9} = 3$

$(10x + 3)(10x - 3)$

or

$(10x - 3)(10x + 3)$