Factoring Review Elementary Algebra Mike Huff

Factoring Out the GCF

Exercise 1: Factoring out the GCF

a) $-20xy^3 + 35x^2y$
b) $8x^3 + 20x - 28$
c) $a(x+5) - b(x+5)$
d) $3y(x+3) - y^2(x+3)$

Factoring By Grouping

Exercise 2: Factoring by Grouping

a) $x^2 + 4x + xy + 4y$
b) $a^2 - ab - 3a + 3b$
c) $3x^3 + 6x^2 + 2x + 4$
d) $x^3 - 7x^2 + 8x - 56$
e) $x^3 - 2x^2 + 3x + 6$

Factoring Trinomials of the Form $ax^2 + bx + c$

Exercise 3: Factoring Trinomials of the Form $ax^2 + bx + c$**.**

a) Factor $x^2 - 5x - 6$.
b) Factor $x^2 - 7x + 6$.
c) Factor $x^2 + 5x - 6$.
d) Factor $x^2 - x - 6$
e) Factor $6x^2 - 18x + 12$.
f) Factor $6x^2 + 7x - 20$.
g) Factor $2x^2 - 7x + 3$.
h) Factor $3x^2 + 20x + 12$.
i) Factor $10x^2 + 7x - 12$.
j) Factor $3x^2 - 11x - 20$.
k) Factor $6x^2 - xy - 12y^2$

Special Factoring Formulas

Exercise 4: Factoring the Difference of Two Squares $x^2 - y^2 = (x + y)(x - y)$

a) $9x^2 - y^2$
b) $9x^2 - 36y^2$
c) $16y^2 - 64x^2$
d) $x^2y^2 - 36$

Exercise 5: Factoring Perfect Square Trinomials
Perfect Square Trinomials: $x^2 + 2xy + y^2 = (x + y)^2$ $x^2 - 2xy + y^2 = (x - y)^2$
a) Factor $x^2 + 14x + 49$.
b) Factor $9x^2 + 12x + 4$.
c) Factor $9x^2 - 12xy + 4y^2$.
d) Factor $4y^2 - 44xy + 121x^2$.

Exercise 6: Factoring the Sum or Difference of Two Cubes

Sum of two cubes:	$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$
Difference of two cubes:	$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

a) Factor $2x^3 - 16y^3$.
b) Factor $1 - 27y^3$.
c) Factor $27x^3 + 8y^3$.
d) Factor $x^3 + 27$.

Exercise 7: **Solving Quadratic Equations by Factoring**
Solve the following equations.

a) $x^2 + x - 2 = 0$
b) $2x^2 + 5x - 3 = 0$
c) $6x^2 - 5x - 6 = 0$
d) $4x^2 + 20x + 25 = 0$
e) $9x^2 - 42x + 49 = 0$

Factoring Review Answers Elementary Algebra Mike huff

Factoring Out the GCF

Exercise 1: Factoring out the GCF

a) answer: $-5xy(4y^2 - 7x)$
b) answer: $4(2x^3 + 5x - 7)$
c) answer: $(a - b)(x + 5)$
d) answer: $y(x + 3)(3 - y)$

Factoring By Grouping

Exercise 2: Factoring by Grouping

a) answer: $(x + 4)(x + y)$
b) answer: $(a - b)(a - 3)$
c) answer: $(3x^2 + 2)(x + 2)$
d) answer: $(x^2 + 8)(x - 7)$
e) answer: $(x^2 + 3)(x - 2)$

Factoring Trinomials of the Form $ax^2 + bx + c$

Exercise 3: Factoring Trinomials of the Form $ax^2 + bx + c$**.**

a) answer: $(x + 1)(x - 6)$
b) answer: $(x - 1)(x - 6)$
c) answer: $(x - 1)(x + 6)$
d) answer: $(x - 3)(x + 2)$
e) answer: $6(x - 1)(x - 2)$
f) answer: $(3x - 4)(2x + 5)$
g) answer: $(2x - 1)(x - 3)$
h) answer: $(3x + 2)(x + 6)$
i) answer: $(5x - 4)(2x + 3)$
j) answer: $(3x + 4)(x - 5)$
k) answer: $(2x - 3y)(3x + 4y)$

Special Factoring Formulas

Exercise 4: Factoring the Difference of Two Squares $x^2 - y^2 = (x + y)(x - y)$

a) answer: $(3x + y)(3x - y)$
b) answer: $9(x + 2y)(x - 2y)$
c) answer: $16(y + 2x)(y - 2x)$
d) answer: $(xy + 6)(xy - 6)$

Exercise 5: Factoring Perfect Square Trinomials

a) Answer: $(x + 7)^2$
b) Answer: $(3x + 2)^2$
c) Answer: $(3x - 2y)^2$
d) Answer: $(2y - 11x)^2$

Exercise 6: Factoring the Sum or Difference of Two Cubes

a) $2(x-2y)(x^2+2xy+4y^2)$
b) $(1-3y)(1+3y+9y^2)$
c) $(3x+2y)(9x^2-6xy+4y^2)$
d) $(x+3)(x^2-3x+9)$

Exercise 7: **Solving Quadratic Equations by Factoring**

a) $x=-2,1$
b) $x=-3,\frac{1}{2}$
c) $x=-\frac{2}{3},\frac{3}{2}$
d) $x=-\frac{5}{2}$
e) $x=-\frac{7}{3}$